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PHOTOGRAPH THIS SHEET 024 INVENTORY  $\infty$ Q Final Contract Rept., Vol. 3, Appendices IV-VV
DOCUMENT IDENTIFICATION May 79 - Nov. 80 MAI Contract DACWOI-79-C-0224 Nov:80 DISTRIBUTION STATEMENT A Approved for public releases Distribution Unlimited DISTRIBUTION STATEMENT **ACCESSION FOR** NTIS GRAMI DTIC TAB UNANNOUNCED JUSTIFICATION BY DISTRIBUTION / AVAILABILITY CODES AVAIL AND/OR SPECIAL DATE ACCESSIONED DISTRIBUTION STAMP 05 11 01 \$ DATE RECEIVED IN DTIC PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDA-2 DOCUMENT PROCESSING SHEET DTIC FORM 70A

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# **FINAL CONTRACT REPORT**

OF DDT CONTAMINATION
OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK,
AND ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

**NOVEMBER 1980** 

VOLUME 3 OF 3
APPENDICES IV-VI

PREPARED FOR:
UNITED STATES ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
CONTRACT NO. DACW01-79-C-0224

SUBMITTED BY: WATER AND AIR RESEARCH, INC. GAINESVILLE, FLORIDA 32602

DISTRIBUTION STATEMENT A

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REPORT DOCUMENTATION	READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Substitue) Final Contract Report: Engineering and Environmental Study of DDT Contamination of Huntsville Spring Branch, Indian		5. TYPE OF REPORT & PERIOD COVERED Final May 1979-November 1980
Creek and Adjacent Lands and Waters Reservoir, Alabama.		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(*)  J. H. Sullivan, W. G. Thiess, M. K. Hein, W. C.  Zegel, H. E. Hudson, H. D. Putnam, B. C. Pruitt  and J. C. Nichols		DACW01-79-C-0224
9. PERFORMING ORGANIZATION NAME AND ADDRESS Water and Air Research, Inc. 6821 SW Archer Road, PO Box 1121 Gainesville, FL 32602		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army		12. REPORT DATE November 1980
US Army Engineer District, Mobile PD-EE, PO Box 2288, Mobile, AL 366	528	13. NUMBER OF PAGES 3 Volumes
14. MONITORING AGENCY NAME & ADDRESS(II differen	t from Controlling Office)	15. SECURITY CLASS. (of this report) Unclassified
is OUTTOIN STATEMENT (of this Report)		15a DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release; Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

IS. SUPPLEMENTARY NOTES

3 volumes

Triana, Alabama Insecticide Sediment Analysis Tissue Analysis
DDT-1,1'-(2,2,2 - Trichloroethylidene) bis (4-chlorobenzene)
Tennessee River Water Analysis Wheeler Reservoir
Huntsville Spring Branch Pesticide Residues Chemical Analysis
Indian Creek

DDT contamination in northeast Alabama near Triana, in the Tennessee River system including Wilson, Wheeler, and Guntersville Reservoirs has occurred because wastes containing DDT residues (DDTR) have migrated to receiving streams. In the area DDTR levels in fish exceed the 5 ppm limit set by the FDA for edible portions of fish. Evidence of human DDT contamination has been found in persons routinely consuming the fish.

In the spring of 1979 an engineering and environmental study began to determine whether or not corrective action is required, and if so, the technical

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approach to such corrective action. The nature and extent of contamination have been defined, and engineering, economic, and environmental feasibility of alternative solutions have been evaluated. Study included extensive field and laboratory work. Data were gathered on fish, sediment, water, macroinvertebrates, plankton, aquatic plants, mammals, birds, and reptiles in the area. Additionally, efforts were made to secure all prior existing data.

Analysis of data provided quantification of pollutant transport by biological (food chain) and physical (mostly hydrologic) processes. Data collected during the current study have been compared to historical data to determine extent of sediment contamination and rate of movement downstream. Groundwater transport has been evaluated.

Principal study findings include:

- 1. An extensive amount of DDTR exists in reservoir sediments.
- 2. DDTR is being moved slowly downstream.
- 3. Fish, particularly channel catfish, are contaminated with DDTR throughout Wheeler Reservoir.
- 4. Contamination of aquatic organisms, results from low levels of DDTR that now exist in water and/or sediment.
- 5. Contamination of aquatic organisms also appears to be caused by migration of contaminated fish to relatively uncontaminated areas.

Remedial alternatives for mitigation were compared to the Natural Restoration Alternative, which is to allow clean-up by natural processes. Alternatives are based on various means of isolating DDTR from the environment and include: (1) dredging or removing the contaminated sediments and placing them in a secure landfill, (2) covering the contaminated sediments in place, and/or (3) bypassing flow around the contaminated area. For the six final alternatives, details regarding engineering and economic feasibilities and environmental and regulatory impacts are presented. Time required for remedial results is also discussed.

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### FINAL CONTRACT REPORT

ENGINEERING AND ENVIRONMENTAL STUDY
OF DDT CONTAMINATION
OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK,
AND ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

**NOVEMBER 1980** 

VOLUME 3 OF 3 APPENDICES IV-VI

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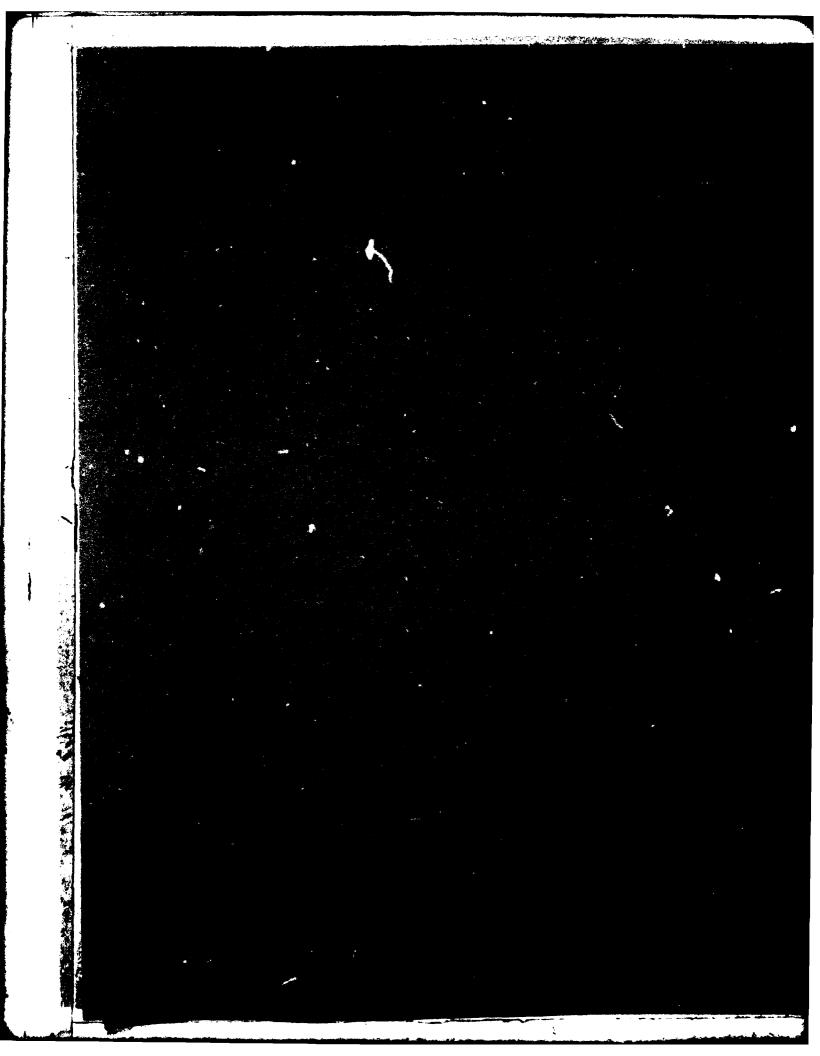
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# ERRATA SHEET FOR QUALITY ASSURANCE DOCUMENTS FOR DDT STUDY TVA - SEPTEMBER 30, 1980

Document Description	Page	Section	<u>Change</u>
QA Document	2	3.3	Add at end of section "were analyzed by TVA"
QA Document	2	3.5	"Microinvertebrates" to "macroinvertebrates"
QA Document	9	4.4.3.1	Change "50 gram" to "25 gram"
QA Document	12	5.1.1.1	Change "auto sampler" to "autosampler"
QA Document	14	5.1.2.1	Change "(see section 5.1.3.4)" to "(see section 5.1.3.5)"
QA Document	23	5.3.2.1	Change "Stewart" to "SLI"
Attachment 1		Table 39	On Lab ID Number IM-10, the sample analyzed by SLI having a total DDTR of 0.849 µg/g should be listed under TVA Lab ID IM-27

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS, WHEELER RESERVOIR, ALABAMA

QUALITY ASSURANCE DOCUMENT

Tennessee Valley Authority Office of Natural Resources

August 1980

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### PREFACE

This document was prepared in support of the Engineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

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### QUALITY ASSURANCE PROGRAM

### 1.0 OBJECTIVE

The objective of this quality assurance program was to utilize procedures which would ensure that final analytical data were truly valid and representative of the concentration profile for the media analyzed.

Data from this program were used to assess and measure the precision and accuracy of analytical results obtained throughout the study and to identify any segment of the total effort which may have been invalid.

#### 2.0 SCOPE

7.

The scope of this program covered the intralaboratory quality control procedures used in Stewart Laboratories, Inc. (SLI), Environmental Protection Agency (EPA), and in the Tennessee Valley Authority's Laboratory Branch (TVA). It also covered the interlaboratory quality control procedures for the data generated by SLI and the EPA Region IV Laboratory Services Branch.

### 3.0 PROCEDURES AND RESPONSIBILITIES

- 3.1 Samples and field data sheets were received by TVA from various field crews as detailed in the seven individual task workplans. The samples were inventoried, irregularities noted, laboratory worksheets prepared, and TVA analysts instructed on the preliminary sample preparation procedures.
- 3.2 Special studies were designed by TVA to ensure that samples were prepared properly and that their analyses would yield usable results. These studies were discussed with the Corps of Engineers (CORP) and Water and Air Research, Inc. (WAR) to get general concurrence before they were conducted.

- 3.6 On approximately 10 percent of the samples analyzed, a second aliquot was removed by SLI and used as a "blind sample" for the analysis of all six isomers of DDTR.
- 3.7 With some batches of sediment, water, and fish samples, a "pooled" sample having an established concentration was submitted for long-term quality control purposes.
- Data on laboratory worksheets were received by TVA from the various laboratories and the data consolidated onto a master laboratory worksheet. After these tabulated data were reviewed for completeness and reasonableness, copies were sent to the CORP, WAR, and appropriate task leaders within the Tennessee Valley Authority. If irregularities in the data were observed, the responsible laboratory was asked to either assist in resolving the discrepancies or reanalyze the samples in question.
- 3.9 The tabulated data were coded and stored in a computer by TVA. Final computer printouts were proofed against the raw data.
- 3.10 All quality control charts were reviewed by TVA to ensure that the analytical procedure was "in control" during the analysis. TVA made a preliminary review of split sample data and attempted to resolve any discrepancies before these data were statistically evaluated.
- 3.11 A statistical evaluation of the split sample data was performed by WAR. Conclusions regarding significant differences between STEWART and EPA data were made based on the results of these evaluations along with the intralaboratory quality control data and the results from the "pooled" samples.

### 4.0 QUALITY CONTROL METHODS

- 4.1 Intralaboratory Control Charts
- 4.1.1 SLI Quality Control Procedures -- A mid-range standard was analyzed throughout the analysis run as every tenth determination (in some projects every seventh determination). Results of these analyses were plotted on control charts with control limits generated through past analysis of samples or standard reference material. The upper and lower control limits (UCL and LCL) were defined as ± 15percent bias, while upper and lower warning limits (UWL and LWL) were set at ± 10percent bias. The results were plotted daily on the control charts. It was a standard policy to reanalyze all samples determined during a period shown to be "out-of-control."
- 4.1.2 TVA Quality Control Procedures
- 4.1.2.1 Evaluation of Accuracy
- 4.1.2.1.1 The data for accuracy quality control charts were generated by analyzing actual samples spiked with a known amount of analyte.

  The percent recovery was determined, and 100 percent was subtracted from it to obtain percent bias. This value was plotted on a control chart indicating upper and lower warning and control limits.
- 4.1.2.1.2 The limits for accuracy control charts were calculated from actual recovery data for large batches of samples (nominally, at least 20). From the individual values of percent bias  $(x_i)$ , the mean  $(\bar{x})$  and standard deviation (SD) are calculated. The warning limits (UWL and LWL) and control limits (UCL and LCL) are  $\bar{x} \pm 1$  SD and  $\bar{x} \pm 2$  SD, respectively.

- 4.1.2.1.3 Two consecutive points or repeated points outside the warning limits (±1 SD) required a close examination of the system to prevent it from going out of control. The analysis was "out of control" when any point fell outside the control limits (±2 SD). It was a standard policy to reanalyze all samples determined during a period shown to be out-of-control.
- 4.1.2.2 Evaluation of Precision
- 4.1.2.2.1 The data for precision quality control charts were generated by analyzing actual samples in duplicate. The difference between the two values (x<sub>i</sub>) was multiplied by 0.89 to obtain the standard deviation (SD). The standard deviation times 100 divided by the mean of the duplicate values yielded the relative standard deviation in percent (% RSD), the unit used in plotting precision control charts.
- 4.1.2.2.2 The limits for precision control charts were calculated from actual precision data for large batches of samples (nominally, at least 20). From the individual values of relative standard deviation  $(\mathbf{x_i})$ , the mean  $(\mathbf{\bar{x_i}})$  and standard deviation (SD) were calculated. The upper warning and control limits (UWL and UCL) were  $\mathbf{\bar{x}} + 1$  SD and  $\mathbf{\bar{x}} + 2$  SD, respectively.
- 4.1.2.2.3 Two consecutive points or repeated points outside the warning limit required corrective action. The analysis was out-of-control when any point fell outside the control limits. It was a standard policy to reanalyze all samples determined during a period shown to be out-of-control.

- 4.1.3 EPA Quality Control Procedures
- 4.1.3.1 Evaluation of Accuracy
- 4.1.3.1.1 A reagent blank was analyzed with each set of samples (12 samples or less) to determine if any contamination problems existed.
- 4.1.3.1.2 A reagent blank, spiked with the DDTR compounds, was analyzed with each set of samples. The percent recoveries are listed in Table 1.
- 4.1.3.1.3 Analytical standards of all DDTR compounds were analyzed on the GC/EC after every fifth sample.
- 4.1.3.2 Evaluation of Precision

  One sample was analyzed in duplicate with each set of samples.

  The difference between the two values (x<sub>i</sub>) was multiplied by

  0.89 to obtain the estimated standard deviation (SD). The

  standard deviation times 100, divided by the mean of the

  duplicate values, yielded the relative standard deviation in

  percent (% RSD). This precision data is listed in Table 1.
- 4.2 Intralaboratory Blind Reference Samples
- 4.2.1 Standard aqueous reference samples (SRM) supplied by Environmental Resource Associates (ERA) having a certified concentration of one of the DDT isomers were analyzed as blind samples by SLI with each analysis batch containing 20 or more samples. These results were used to provide a measure of the accuracy with each batch of samples analyzed.
- 4.3 Intralaboratory Blind Split Samples
- 4.3.I Laboratory Procedure

  The SLI project director or QC coordinator prepared a second aliquot from the original sample and assigned new numbers to

all the samples in the batch, and the samples inserted into the analytical stream. Ten percent of the samples were analyzed as blind replicates. These blind split data were subjected by SLI to a specialized statistical treatment which determined if significant differences existed between the set of original samples and the corresponding set of splits.

4.3.2 Statistical Evaluation of Blind Split Data
In addition to the analysis noted above, blind split results
were analyzed by using the concept of percent relative error
which is defined as the difference between two replicate
samples divided by the mean of the samples expressed as percent.
It is calculated as follows:

% Relative error = 
$$\frac{\{\text{sample } 1 - \text{sample } 2\}}{\{\text{sample } 1 + \text{sample } 2\}}$$
 200

Percent relative error can vary only between -200 and +200.

A helpful way of conceptualizing relative error is to consider its relationship to the ratio of the samples. This relationship can be calculated as follows:

Ratio 
$$\frac{\text{sample } 1}{\text{sample } 2} = \frac{\{200 + \% \text{ relative error}\}}{\{200 - \% \text{ relative error}\}}$$

Representative values are as follows:

Ratio $\frac{\text{sample } 1}{\text{sample } 2}$	% Relative Error	Ratio <u>sample 1</u> sample 2	% Relative Error
0	-200	00	200
0.01	-196	100	196
0.10	-164	10	164
0.20	-138	5	133
0.33	-100	3	100
0.50	- 67	2	67
0.67	- 40	1.5	40
0.83	- 18	1.2	18

In the calculation of percent relative error it was necessary to adopt some convention regarding the evaluation of "less than detection limit" values for some isomers in calculating DDTR values. It was decided that average DDTR values would be used, i.e., that "less than" values would be assumed to be one-half the detection limit. In some cases the range of possible results that could be obtained, based on how "less than" values were considered, made it impossible to conclude which sample was larger. This occurred most often where concentrations were very low. It was decided that these sample pairs yielded no valid information regarding relative results and such pairs were not considered in average relative error calculations. In evaluating blind split samples, the order of the samples was assumed to be immaterial. Thus the absolute value of the relative error was utilized.

### 4.4 Interlaboratory "Pooled" Sample

- 4.4.1 "Pooled" Water Sample~-A "pooled" water sample was prepared by spiking 19 liters of deionized water with all isomers of DDTR (except p,p', DDD) to obtain a calculated DDTR concentration of 25 μg/L. A total of 38 aliquots containing 500 mL each were removed and stored at 4°C. Samples were submitted with some batches of water samples for long-term quality control purposes.
- 4.4.2 "Pooled" Sediment Samples--A "pooled" sediment sample was prepared by compositing eight quarts of sediment collected from Indian Creek mile 2.5. The sample was mixed by intermittently stirring by hand for three days. The sample was

then mixed for thirty minutes with a hand mixer. The sample was then quartered and the first and third quarter removed and mixed. The same was repeated with the second and fourth quarter. The quartering process was repeated several times. After the mixing was complete, 50-gram aliquots were removed and frozen in aluminum pans. Samples were submitted with some batches of sediment samples for long-term quality control purposes.

- 4.4.3 "Pooled" Fish Sample
- A.4.3.1 Several channel catfish which were collected from Tennessee River mile 283 were fileted, skinned, and shipped to TVA.

  The fish filets were allowed to partially thaw and then passed through a Hobart meat grinder (1/8" porosity). The blended fish was caught in a stainless steel pan, quartered, and reground taking in order the first, third, second, and then the fourth quarters. This procedure was repeated five times. Approximately 50-gram aliquots were weighed into aluminum pans and frozen. These were used for the low concentration "pooled" fish sample.
- 4.4.3.2 The procedure used above was repeated using channel catfish from Indian Creek mile 0.5-6.0 to obtain a control sample with a high concentration of DDTR.
- 4.4.3.3 Both high and low "pooled" fish samples were submitted with some batches of fish samples for long-term quality control purposes.

### 4.5 Interlaboratory Split Samples

### 4.5.1 Procedure

### 4.5.1.1 Water

On approximately 10 percent of the samples received by TVA, aliquots were sent to EPA and SLI for DDTR analysis to determine interlaboratory precision. These samples were prepared by compositing using a churn splitter (see section 5.1.3.1) and removing two aliquots for analysis.

### 4.5.1.2 Sediment

Sediment samples were composited and thoroughly mixed to assure a homogeneous sample (see section 5.2.3.1). On approximately 10 percent of the samples, after the sample had been uniformly mixed, two aliquots were removed. These two aliquots were sent for analysis to EPA and SLI to determine interlaboratory precision.

### 4.5.1.3 Fish and Vertebrates

Each fish or vertebrate sample was homogenized by either dicing or blending. On 10 percent of the samples, two aliquots of the well-mixed fish were removed and sent to EPA and SLI for interlaboratory precision.

### 4.5.1.4 Plankton, Benthos, and Aufwuchs

The sample size for all the plankton samples and the majority of the benthos and aufwuchs samples collected were too small to allow splitting for interlaboratory precision. On all the benthos and aufwuchs samples that were large enough to split, the samples were first homogenized, then divided into two aliquots and sent to EPA and SLI for analysis.

### 4.5.1.5 Plants

Since it would have been difficult to split the plant samples, it was decided that all the plant samples would be sent to SLI for preparation and analysis. After the initial step in the procedure where the samples were blended in the solvent, 10 percent of the sample extracts were split and returned to TVA. These extracts were in turn sent to EPA for interlaboratory quality control.

4.5.2 Statistical Evaluation of Interlaboratory Split Data

Interlaboratory split data were analyzed using percent relative
error to determine if bias existed between SLI and EPA. This
procedure is explained in Section 4.3.2.

### 5.0 RESULTS AND DISCUSSION

### 5.1 Water Samples

- 5.1.1 Intralaboratory Data
- DDTR analyses were performed by SLI as described in section 4.1.1. During one analytical run on August 27, 1979, while analyzing Task 3 sediment and water, the control chart data points fell beyond the warning limits on the control charts as a result of an antecedent power outage due to road construction near the laboratory. As soon as the instrumentation systems were allowed to equilibrate, stable conditions returned. In another case, one "out-of-control" period occurred on September 14, 1979, while analyzing Task 4 sediments and Task 6 water samples. Many of the samples from these tasks contained high concentrations of DDTR and had contaminated

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the auto sampler. The system was shut down and cleaned extensively. When normal operating conditions were again established, all samples which had been analyzed on September 14, 1979, were reanalyzed. There were no other "out-of-control" situations either in SLI or TVA that occurred during the analysis of water samples. The completed control charts were placed in TVA files and are available for future inspections.

5.1.1.2 Reference Samples--Blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by Stewart as described in section 4.2.

They were analyzed with each batch of samples to assure the consistency of the data. These data are tabulated in Table 2, along with the TVA project number with which the reference samples were analyzed. A list of the TVA project numbers and the type and task number of the samples analyzed on that project is given in Table 3.

Since several types of samples were analyzed during one project, along with the reference material, it was impossible to separate the results from the reference material by the type of samples analyzed for the purpose of determining the intralaboratory accuracy for each type of material analyzed. The average recovery for all the reference material analyzed during the DDT project was 93 ±14 percent. The recoveries ranged from a low of 69.2 percent and a high of 126 percent. A statistical summary of the reference data is given in Table 4.

5.1.1.3 Blind Split Samples--Intralaboratory blind split samples were analyzed as described in section 4.3.1. DDTR analyses were performed on three types of water samples. The entire water sample was analyzed as is (total water), the solids in the water were analyzed (suspended solids), and filtered water samples (dissolved water) were analyzed. Blind split samples within SLI were analyzed for total and filtered water samples. The results are shown in Tables 5 and 6. Many samples had concentrations at or below detection limits making it impossible to determine which of the pair of values was higher. Mean absolute relative error was determined using only sample pairs where one value could be determined to be different from the other. With this procedure, mean absolute relative error was determined to be 12 percent for total water samples and 16 percent for filtered water samples. These relative error values correspond to mean sample ratios of 1.13 and 1.17, respectively.

- 5.1.1.4 "Pooled" Water Samples--A "pooled" water sample was prepared as directed in section 4.4.1. Replicate water samples were not submitted to either EPA or SLI to determine intralaboratory precision.
- 5.1.2 Interlaboratory Data
- 5.1.2.1 "Pooled" Water Samples

A total of fifteen "pooled" water samples were analyzed by SLI and eight by EPA. These results are tabulated in Table 7. Part of these samples were analyzed after the analytical methodology for the analysis of water had been modified to include the addition of salt before extraction

(see section 5.1.3.4). SLI obtained a mean concentration of  $15.4 \pm 2.7 \, \mu g/L$  before the methodology change on eight "pooled" samples and  $19.7 \pm 1.5$  on seven "pooled" samples after the procedural change. This is a significant increase in DDTR recovery (significance level is <0.01) using the modified analytical procedure. EPA obtained a mean concentration of  $15.3 \pm 2.7 \, \mu g/L$  on six "pooled" water samples before the methodology change. On two "pooled" samples analyzed by EPA after the methodology change, a mean concentration of 21.3 was obtained.

## 5.1.2.2 Split Samples

Total water, suspended solids, and filtered water samples were split between SLI and EPA. The results are shown in Tables 8-10. Mean percent relative error was calculated using only sample pairs where one result was definitely different from the other. The values were 0 percent, 7 percent, and 6 percent, respectively, for the three sample types. Relative errors greater than 1.0 denote SLI results higher than EPA.

- 5.1.3 Special Studies
- 5.1.3.1 Use of the Churn Splitter
- 5.1.3.1.1 Objective--During the preparation of the workplans, it was pointed out that a churn splitter should be used to composite the water samples. The churn splitter designed by the U.S. Geological Survey (USGS) to enable the preparation of a homogeneous mixture of water and sediment was selected as the equipment for preparing composite water samples containing various amounts of suspended solids. The objective of this study was to ensure that the plastic material of which the

churn splitter was made would not contaminate the sample, nor would adsorb DDTR. A secondary objective of this study was to verify that the splitter could be used to obtain replicate aliquots.

5.1.3.1.2 Experimental Design and Results- A water standard containing 0.1 µg/L of DDTR was placed into two clean plastic churn splitters and aliquots withdrawn from each after 3 minutes and 4 hours. Each aliquot was analyzed for DDTR by the analytical procedure referenced in Attachment 3. Each chromatogram was inspected to see if extraneous peaks were present. None were detected. The concentrations of DDTR measured gave average DDTR recoveries of 67 percent after 3 minutes and 75 percent after 4 hours. These recoveries were unacceptable, so a new churn splitter was fabricated from aluminum and stainless steel. DDTR recovery studies were performed on two different days using the metal churn splitter and recoveries of 90 percent immediately after mixing, 84 percent after 2 hours, and 78 percent after 4 hours were obtained. These data were acceptable since samples would be in contact with the container for less than 30 minutes. A sample collected from the first rain event was added to the splitter and, after mixing according to USGS directions, seven aliquots were withdrawn for non-filterable residue and total DDTR analysis. The results from this study are shown in Table 11. The seven replicates gave a mean concentration of suspended solids of 51 mg/L with a standard deviation of 1.07. The mean for the total DDTR concentration was 14.8 µg/L with a

standard deviation of 0.90. This was a percent relative standard deviation of 2.1 for the non-filterable residue and 6.1 for the total DDTR.

- 5.1.3.1.3 Conclusion--A sample containing DDTR can be added to a metal churn splitter and homogeneous samples removed without significant losses of DDTR.
- 5.1.3.2 Use of Cellulose Membrane Filters
- 5.1.3.2.1 Objective--The elutriate test procedure specifies that cellulose membrane filters are to be used to obtain the filterable portion of a sample. The objective of this study was to determine if suspended particulates could be removed by filtering samples through a cellulose membrane filter without contaminating the filtrate or removing DDTR from the sample.
- 5.1.3.2.2 Experimental Design and Results--A deionized water sample was spiked with five DDTR isomers and shipped to SLI. The sample was filtered through the cellulose membrane and the filtrate analyzed for DDTR. The data are shown in Table 12. Only 25.0 percent of the original DDTR was recovered in the filtrate. This study indicated that DDTR was readily adsorbed by membrane filters.
- 5.1.3.2.3 Conclusion--It was agreed by the Corps of Engineers that glass fiber filters had to be used when samples were filtered for the elutriate tests and analysis of the priority pollutants, and that membrane filters could not be used for determining the concentration of dissolved DDTR in water samples. Portions of the filtrate obtained using glass fiber filters were refiltered using 0.45  $\mu$  membrane filters to determine the suspended solids passing the glass fiber filters.

- 5.1.3.3 Extraction Efficiency of DDTR from Suspended Solids
- 5.1.3.3.1 Objective--The objective of this study was to determine the effectiveness of the water analytical procedure for extracting DDTR from samples containing different concentrations of suspended solids.
- 5.1.3.3.2 Experimental Design and Results--Six water samples (three deionized and three native water) containing 73 mg/L, 370 mg/L, and 3,700 mg/L of suspended solids was made from the "pooled" sediment sample which had a total DDTR concentration of 21.6 μg/g. Recoveries of the DDTR from the sediment in deionized water were 43.7, 45.9, and 47.4 percent, respectively, for the above three suspended solids concentrations. The recoveries from the native water matrix were 25.8, 43.4, and 49.7 percent, respectively, at the same suspended solids concentration. A tabulation of this data is listed in Table 13.
- 5.1.3.3.3 Conclusion--From this limited data, it was determined that water and suspended solids might have to be analyzed separately to increase extraction efficiencies. To determine this, a mass balance study was conducted on the water by analyzing for total, dissolved, and suspended DDTR. This special study is described in 5.1.3.4. Also, the procedure for analyses of water for dissolved DDTR was modified to include a "salting out" step. This is described in 5.1.3.5.
- 5.1.3.4 Comparison of DDTR Analysis on Total Water
  by Both Calculation and Direct Analysis
- 5.1.3.4.1 Objective--Apparent problems of recovering DDTR from suspended particulates in water led to a suggested modification of the water analytical procedure. The sediment analytical procedure

appeared to be more efficient in removing DDTR from sediment particles. On the fifth rainfall event, whole water samples were analyzed along with the dissolved and suspended fractions. The objective of this study was to compare the sum of suspended DDTR and dissolved DDTR to the value when a whole water sample was analyzed for DDTR to estimate extraction efficiencies.

- 5.1.3.4.2 Experimental Design and Results--Ten one-liter samples from rain event No. 5 of Task 6 were filtered and the residue on the pad analyzed as a sediment sample. The filtrate and an unfiltered sample were also analyzed for DDTR. The results (Table 14) showed that slightly higher values are obtained for total DDTR by analyzing the filterable and suspended portions separately rather than analyzing the whole water sample.
- 5.1.3.4.3 Conclusion--From these data, it appears that there is no significant problem in extracting DDTR from suspended particles in unfiltered samples at these suspended solids concentrations. These data do not agree with those of the extraction experiment (5.1.3.3.3) and differences cannot be explained except for differences in the suspended solids particle sizes in the two experiments. However, the data in this study should be more valid since the analysis was performed on real samples.
- 5.1.3.5 Modification of Analytical Procedure
- 5.1.3.5.1 Objective--This study was suggested as a result of questions that arose about the preliminary data. The objective of this special study was to determine if the addition of salt would increase the extraction efficiency for DDTR on particles that pass through a glass fiber filter and is included in the filterable phase.

- 5.1.3.5.2 Experimental Design and Results--Four samples were split and analyzed both with and without the addition of salt. Sodium chloride was added prior to extraction to half of the split samples. The other half of the split samples were analyzed without the addition of salt. The results (Table 15) showed only a marginal increase in extraction efficiency with the addition of salt prior to the extraction. However, the salt enhanced the phase separation between the water and the solvent, thus making the extraction step easier.
- 5.1.3.5.3 Conclusion--It was a mutual agreement between the CORP, TVA, EPA, and SLI that salt would be added for the DDTR analysis on the filterable samples associated with rains 5, 6, and 7 of task 6.
- 5.2 Sediment
- 5.2.1 Intralaboratory Data

section 5.1.1.1.

- Intralaboratory control charts were plotted for DDTR analyses
  by SLI as described in section 4.1. There were two occasions
  when "out-of-control" conditions existed while analyzing
  sediment samples. For a discussion of these incidents see
- During the analysis of sediment samples, blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by SLI as described in section 4.2. Since several types of samples were analyzed during one project along with the reference material, it was impossible to separate the results from the reference samples

by the types of samples analyzed. A discussion on the results of the reference material is found in section 5.1.1.2.

#### 5.2.1.3 Blind Split Samples

Intralaboratory blind split samples were analyzed as described in section 4.3. The results from these blind split samples are shown in Table 16. Mean absolute relative error for sample pairs where one sample is definitely different from the other was 14 percent. This corresponds to a mean ratio of 1.15 for sample pairs.

A second set of blind split analyses resulted from a request for selected individual sediment core analyses. Samples were prepared from the original cores by TVA and resubmitted to SLI. Inadvertently, seven of the requested analyses had been performed previously. The mean absolute relative error for this sample group was 84 percent (mean sample ratio of 2.45). The results are shown in Table 17. The higher relative error probably was due to lack of homogeneity in the sediment core.

### 5.2.2 Interlaboratory Data

## 5.2.2.1 "Pooled" Sediment Samples

A "pooled" sediment sample was prepared as directed in section 4.1.4.2. Five replicates of the homogenized mass of sediment were sent to SLI and EPA. Data analysis of their results (shown in Table 18) for total residual DDTR indicates a tendency for concentrations from EPA to be about 14 percent higher than SLI. This result is statistically significant at p = .037, based on a two-sample t-test of equality of mean laboratory determinations. It applies to sediment with DDTR concentrations in the range of 25 to 30  $\mu g/g$ .

#### Summary Statistics

	Stewart	<u>EPA</u>
Mean	25.61	29.52
Standard Deviation	1.60	3.10
Coefficient of Variation	6.2%	10.5%
Difference (STEWART - EPA) Relative Difference	-3.9 -14.	l μg/g 2%

Eight additional "pooled" sediment samples were submitted with the routine samples as long-term QC samples. These results are also shown in Table 18. Six samples were analyzed by SLI giving a mean concentration of 22.6  $\mu$ g/g with a standard deviation of 4.8  $\mu$ g/g. On the two samples analyzed by EPA, a mean concentration of 28  $\mu$ g/g was obtained. These results compare favorably with the results obtained on the replicate samples. The pooled sample data indicates that there may be a slight negative bias on SLI's sediment analysis when compared to EPA results.

The "pooled" sediment was also analyzed in replicate for trace metals and particle size to determine intralaboratory precision. These results are shown in Table 19.

## 5.2.2.2 Split Samples

Interlaboratory split sediment samples were analyzed as directed in section 4.5. The results from these samples are shown in Table 20. The mean relative error for samples where one value is definitely different from the other is 21 percent (SLI 1.23 times EPA values).

- 5.2.3 Special Studies
- 5.2.3.1 Sediment Compositing Verification
- 5.2.3.1.1 Objective--Sediment samples contain gravels, shells, leaves, sticks, and etc.; therefore, it is very difficult to homogenize the sample so that a representative aliquot can be withdrawn for analysis. The objective of this study was to determine the effectiveness of the compositing procedure.
- 5.2.3.1.2 Experimental Design and Results--A sediment sample from Huntsville Spring Branch mile 5.4 was composited and eight aliquots were shipped and analyzed for DDTR. The results gave a relative standard deviation of 23 percent at a mean DDTR concentration of 180  $\mu g/g$ . These results are shown in Table 21.
- 5.2.3.1.3 Conclusion--The compositing and mixing procedure was judged to be acceptable because replicate aliquots can be withdrawn from composited sediment samples.
- 5.3 Fish Samples
- 5.3.1 Intralaboratory Data
- 5.3.1.1 Quality Control Charts

  Intralaboratory Control Charts were plotted for DDTR analysis
  by SLI as described in section 4.1. There were no "out-ofcontrol" conditions that existed while analyzing fish samples.
- During the analysis of fish samples, blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by SLI as described in section 4.2. Since several types of samples were analyzed during one project, along with the reference material, it was

impossible to separate the results from the reference material by the types of samples analyzed. A discussion on the results of the reference material is found in section 5.1.1.2.

#### 5.3.1.3 Blind Split Samples

Intralaboratory blind split samples were analyzed as described in section 4.3. In the initial fish analyses by SLI, 40 blind split analyses were performed. The results are shown in Table 22. Twenty-nine sample pairs yielded valid\* relative error results. The average absolute relative error was 61 percent, which is equivalent to an average ratio of 1.88.

As discussed in section 5.3.2.2, it was suspected that for certain days the SLI results may have been significantly biased low. After grouping blind split data into "good day" and "bad day" groups, the average absolute relative errors were 71 and 43 percent respectively. The lower relative error for "bad day" data may have been due to a low bias on these samples which reduced the range of possible variation.

## 5.3.2 Interlaboratory Data

#### 5.3.2.1 "Pooled" Fish Samples

Two "pooled" fish samples were prepared as directed in section 4.1.4.3. Five aliquots from each "pooled" sample were submitted to both EPA and SLI for analysis. The initial results showed good agreement between EPA and SLI, EPA being about 17 percent higher than STEWART for low DDTR concentration fish, and about 10 percent higher for samples with a higher concentration of DDTR. This data is summarized below:

A 44 1

<sup>\*</sup>Valid relative error results could not be obtained for some sample pairs due to "less than" values (see 4.3.2).

#### Summary Statistics

	Lo Concent		High Concentr	
	Stewart	EPA	Stewart	EPA
Mean	2.95 ppm	3.48 ppm	317. ppm	350. ppm
Standard Deviation	0.28 ppm	0.38 ppm	24. ppm	39. ppm
Coefficient of Variation	9.4%	10.9%	7.6%	11.2%
Difference (STEWART-EPA)	-0.5	3 ppm	-33.	µg/g
Relative Difference	-16.6	%	-9.	8%

Twenty-three additional high and low concentration "pooled" fish samples were submitted with the routine fish samples as long-term QC samples. These results are shown in Tables 23 through 26 and are plotted in Figures 1 and 2 of Attachment 2. From this data, it appeared that an analytical problem existed during the days of November 29 and December 5, 6, and 7. Data for December 4 and 13 also appeared somewhat questionable. It was first suspected that sample non-homogeneity may have been a problem. A special study was performed to evaluate this (see 5.3.7.2) and it was found that non-homogeneity could not have accounted for the low results observed.

## 5.3.2.2 Split Samples

Interlaboratory split fish samples were analyzed as directed in section 4.5. The results from 26 split samples are shown in Table 27. Twenty-three sample pairs yielded valid relative error results and showed a mean of -53 percent (EPA 1.72 times SLI). However, data from the "pooled" fish analyses suggested that problems with SLI data may have occurred on certain dates. The data were divided according to dates processed by SLI and it was found that data from November 29 and 30, and December 5 and 6, had an average relative error of -86 percent, whereas

the remaining data had an average relative error of -35 percent. The values are equivalent to EPA/SLI ratios of 2.51 and 1.42. For the suspect data, 7 of 8 samples showed EPA higher than SLI results. For the remaining data, 10 of 15 samples showed EPA results higher than SLI. Based largely on these results, a decision was made to have SLI reanalyze some samples prepared on November 29, and 30, and December 4, 5, 6, and 7 to determine if a more complete reanalysis should be performed.

- Initial Fish Reanalysis

  Initially 40 samples were selected from fish processed on

  November 29 and 30 and December 4, 5, 6, and 7 (and inadvertently, one sample from December 12) for reanalysis by SLI.

  Fifteen of these fish were also analyzed by EPA.
- 5.3.3.1 Intralaboratory Data

Of the 40 samples, SLI successfully reanalyzed 38. Nine samples from December 4 and the one from December 12 were grouped together and compared to the original SLI values. Average relative error was -4 percent (rerun results slightly higher than original values). These results are shown in Table 28. Based on these results, the December 4 data were accepted and considered "good day" data. Of the remaining samples, 21 yielded results valid for determining differences (see Table 29). Average relative error was -48 percent (rerun values higher), which is equivalent to a rerun/original value ratio of 1.63. Of the 21 samples, 14 increased compared to original values. Based on these results, the original data for November 29 and 30 and December 5, 6, and 7 were not accepted.

During this reanalysis of fish, two blind split samples were analyzed within SLI (Table 30). The mean absolute relative error was 15 percent (average ratio of 1.16).

Of the fish analyzed by EPA, 5 had been analyzed previously. The results of these analyses yielded 4 valid comparisons with an average relative error of 38 percent (original values higher). Three of the 4 samples were lower than original results. The results are shown in Table 31.

Of the 15 samples split with EPA during this initial rerun phase, 11 yielded results valid for determining differences.

Average relative error was -20 percent (EPA 1.22 times higher than SLI). For 8 of the 11 samples, EPA was higher. The

results are shown in Table 32.

- 5.3.4 Main Fish Reanalysis

  Based on the results of the partial reanalysis discussed

  above, it was decided to have SLI reanalyze all fish processed
  on November 29 and 30, and December 5, 6, and 7.
- 5.3.4.1 Intralaboratory Data
- 5.3.4.1.1 Quality Control Charts--Intralaboratory Quality Control
  Charts were plotted for DDTR analysis by SLI as described in
  section 4.1. This was done for the reanalysis of the fish
  samples. There were no out-of-control conditions that existed.
- 5.3.4.1.2 Reference Samples--During the reanalysis of the fish samples, two blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by SLI, as described in section 4.2. A concentration of

- 0.25  $\mu$ g/l was obtained on a certified sample of o,p' DDT, which contained 0.26  $\mu$ g/l for a percent recovery of 96 percent. A certified sample containing 0.50  $\mu$ g/l of p,p' DDE was also analyzed and gave a concentration of 0.53  $\mu$ g/l for a percent recovery of 106 percent.
- 5.3.4.1.3 "Pooled" Fish Samples--During this reanalysis phase of the work,

  EPA analyzed 3 additional replicates each of the high and low

  "pooled" fish samples. The results are shown in Table 33.
- 5.3.4.1.4 Blind Split Samples--Intralaboratory blind split samples were analyzed as directed in section 4.3. The results from these blind split samples are shown in Table 34. The average absolute relative error is 61 percent which is equivalent to an average ratio of 1.88.
- 5.3.4.2 Interlaboratory Data
- 5.3.4.2.1 Split Samples--Interlaboratory split fish samples were analyzed as directed in section 4.5. The results from these split samples are shown in Table 35. The average relative error is -32 percent (EPA 1.38 times higher than SLI). For 7 of 9 samples, EPA was higher than SLI.
- Subsequently, a review of the data showed that little information existed validating the results for samples processed by SLI on December 12. Further, "pooled" fish samples processed by SLI one day later (December 13) showed questionable results. Hence, a group of fish from December 12 was resubmitted for analysis, along with some vertebrate samples processed during that general time period, plus some individual fish samples not previously analyzed. Some samples were split with EPA.

## 5.3.5.1 Interlaboratory Data

Four fish and 5 vertebrate (nonfish) samples were split between SLI and EPA. Eight valid comparisons resulted with an average relative error of -147 percent (EPA 6.55 times higher than SLI). In all 8 cases, EPA was higher than SLI. The data are shown in Table 36. Based on these results all SLI results for this group of analyses were rejected.

Subsequently, all remaining fish from samples processed by SLI on December 12 were submitted to EPA for analysis. A summary of all comparisons between EPA and SLI data from December 12 samples is shown in Table 37. For 9 samples the average relative error was -102 percent (EPA 3.08 times higher than SLI). For all 9 samples, SLI results were less than EPA. Insufficient fish tissue remained for any further reanalysis.

A decision was made to retain all the December 12 analyzed data in the data set. These data have been identified so that interpretations utilizing this information can be made with the full understanding that it appears to have a significant low bias.

- 5.3.6 Summary of Fish Data
- 5.3.6.1 Intralaboratory Data
- 5.3.6.1.1 Blind Split Samples--All blind split data are shown in Table 38.

  The original blind split values for samples considered invalid have been dropped. The absolute relative error was 60 percent (average ratio of values was 1.86).

Blind split samples are a good measure of analytical reproducibility. Of particular interest in this case is the range of values that could be expected from a fish sample having a true DDTR concentration of 5 ppm, the FDA standard. This range can be calculated if the variance of the analytical procedure can be determined. Unfortunately, relative error does not produce a variance estimate. Hence, analysis of variance techniques were utilized.

A complicating factor is the selection of a proper data base to use for estimating the variance. For instance, should very low or very high concentration sample pairs be included in the data set? Further, should whole body samples be considered since it appears that within-lab variance for these samples was greater than for filet or composite filet samples? Finally, how should the data be transformed in an effort to counteract the obvious variance increase with concentration?

The transform that appears to be best suited for this data is the natural log of DDTR. To show the effect of data set makeup, several situations were considered. First, all 38 valid blind splits were considered. Second, a culled data set containing only sample pairs with mean DDTR values greater than one and less than fifty was considered. Finally, this same culled data set with further elimination of all whole body samples was evaluated. The results, along with the 95 percent confidence bound around 5  $\mu g/g$ , are shown below:

Data Set	Data Pairs in Set	Variance	95% Confidence Bound Around A True Mean of 5 μg/g DDTR
All valid pairs	38	0.394	1.4 to 17.6 µg/g
Only pairs with mean values >1 and <50	17	0.325	1.6 to 15.6 μg/g
Only pairs with mean values >1 and <50 and excluding all whole body split	13 s	0.105	2.6 to 9.6 μg/g

- 5.3.6.2 Interlaboratory Data
- 5.3.6.2.1 Split Samples--All split samples utilizing acceptable SLI and
  EPA data are shown in Table 39. The average relative error
  was -39 percent (EPA 1.48 times higher than SLI). Of 46 samples,
  36 showed EPA values higher than SLI.

with the data for samples analyzed by SLI on December 12 excluded, the average relative error was -24 percent (EPA 1.27 times higher than SLI). Of 37 samples, 27 showed EPA values above SLI. The bias between laboratories was statistically significant at the 95 percent level.

- 5.3.7 Special Studies
- 5.3.7.1 DDT Concentration Gradient in Fish Filets
- 5.3.7.1.1 Objective--It was hypothesized that a DDTR concentration gradient existed in fish tissue. The objective of this study was to determine which portion of fish tissue to select for analysis in order to get a representative sample.
- 5.3.7.1.2 Experimental Design and Results--A whole filet from a catfish, bass, and buffalo was taken from the fish after it had been skinned. Each filet was measured and cut into four equal

sections based on length. Each of the four sections of muscle was diced and blended to ensure homogeneity, and the DDTR concentration was determined on each section. These data are shown in Table 40.

- 5.3.7.1.3 Conclusion--These data show that the DDTR concentration could vary from the head end to the tail of a fish; therefore, whole filets from each fish were taken as the sample for the analysis. TVA diced the filet into small pieces and aliquots taken from each diced filet were then blended for the composite sample which was to be analyzed for DDTR concentration. The remainder of the diced filet was used for individual sample analysis.
- 5.3.7.2 Migration of Lipids Within the "Pooled" Fish Sample
- 5.3.7.2.1 Objective--During certain periods, extremely low values were obtained for the "pooled" fish samples (see Figures 1 and 2).

  One explanation for these low values was that since the time of preparation of the "pooled" fish sample, visual changes had occurred within each sample during the packaging and storage of these samples. From the appearance, it looked as if the lipids in the fish had migrated to the periphery of the samples. Because losses of the material from the container was evident as well as the fact that the "pooled" material was not quantitatively transferred from the container, it was proposed that these losses could be significant.
- 5.3.7.2.2 Experimental Design and Results--To test this hypothesis, both high and low "pooled" fish samples were dissected (see Figure 3) and DDTR analyses performed on each part. This was to determine if the lipids containing the DDTR had migrated to the periphery

of the samples. In addition, "pooled" samples were also analyzed exactly as the original analysis except the DDTR was extracted from the empty containers. The results shown in Table 41 indicate that some migration of lipids had taken place but this migration did not greatly affect the concentration of the DDTR in the "pooled" sample. On five samples, EPA extracted the "empty" containers and analyzed this extract as well as the "pooled" sample. Although they did obtain some high DDTR concentrations (1200  $\mu$ g/g) on the extraction of the "empty" containers, the weight of this material was very small (~0.05 g) compared to the sample weight of the "pooled" fish (~25 g) and was therefore negligible.

- 5.3.7.2.3 Conclusion--It is evident both from visual comparison as well as the data from the migration experiment that some migration of lipid material had taken place. These data do not, however, indicate that this migration has rendered the samples useless as a reference material. From the data in this experiment, it was concluded that the "pooled" material was valid and should remain in the quality assurance program report.
- 5.4 Vertebrate (Excluding Fish) Samples
- 5.4.1 Intralaboratory Data
- 5.4.1.1 Quality Control Charts

  Intralaboratory control charts were plotted for DDTR analysis
  by SLI as described in section 4.1. There were no "out-ofcontrol" conditions that existed while analyzing vertebrate
  samples.

5.4.1.2 Reference Samples

During the analysis of vertebrate samples, blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by SLI as described in section 4.2. Since several types of samples were analyzed during one project, along with the reference material, it was impossible to separate the results from the reference material by the types of samples analyzed. A discussion on the results of the reference material is found in section 5.1.1.2.

- 5.4.1.3 Blind Split Samples
  - Intralaboratory blind split samples were analyzed as described in section 4.3. The results from these blind split samples are shown in Table 42. Five of the split samples yielded valid relative error data. The mean absolute relative error was 100 percent (average ratio of 3.0).
- 5.4.2 Interlaboratory Data
- 5.4.2.1 Split Samples

Interlaboratory split vertebrate samples were analyzed as directed in section 4.5. The results from these split samples are shown in Table 43. Ten of the split samples yielded valid relative error data. The mean relative error was -120 percent (EPA 4.0 times SLI). For 9 of the 10 sample pairs, EPA values were higher than SLI.

- 5.5 Aquatic Organisms and Plants
- 5.5.1 Intralaboratory Data
- 5.5.1.1 Quality Control Charts

  Intralaboratory control charts were plotted for DDTR

  analysis by SLI as described in section 4.1. There were no

4. 14 to 15

"out-of-control" conditions that existed while analyzing aquatic organism samples.

### 5.5.1.2 Reference Samples

During the analysis of aquatic organism samples, blind aqueous reference samples supplied by Environmental Resource Associates were inserted into the analytical stream by SLI as described in section 4.2. Since several types of samples were analyzed during one project, along with the reference material, it was impossible to separate the results from the reference material by the types of samples analyzed. A discussion on the results of the reference material is found in section 5.1.1.2.

- 5.5.1.3 Intralaboratory blind split samples were analyzed as described in section 4.3. Included in this sample group were zooplankton, phytoplankton, aufwuchs, macroinvertebrates, and plants.

  Phytoplankton DDTR analytical procedures were the same as for water samples and all split sample results were included in section 5.1. Split sample data were available only for macroinvertebrates and plants and are shown in Tables 44 and 45. The mean absolute relative error for macroinvertebrates was 22 percent and for plants, 47 percent. This corresponds to mean sample ratios of 1.25 and 1.61, respectively.
- 5.5.2 Interlaboratory Data
- 5.5.2.1 Split Samples

Interlaboratory split samples were analyzed as directed in section 4.5. Included in this sample group were zooplankton, phytoplankton, aufwuchs, macroinvertebrates, and plants.

Phytoplankton DDTR analytical procedures were the same as for water samples and all split sample results were included in

## 6.0 CONCLUSIONS

6.1 Water Samples

The analytical reproducibility of this data appears to be good and is within the interpretative requirements of this study. The agreement between SLI and EPA is acceptable also.

6.2 Sediment Samples

The analytical reproducibility within SLI on the initial samples was excellent, particularly for sediment samples. However, when completely independent samples were removed from the sediment cores, as was done in the "by request" samples, the relative error increased dramatically. This increased variability probably was related to (1) the difficulty in achieving a completely mixed uniform core sample and (2) the time separating the two samplings and analyses. A conservative assumption would be to consider the "by request" sample splits as representative of combined sampling and analytical variability.

Due primarily to the fact that the DDTR concentrations in sediment measured during this study varied over about 5 orders of magnitude, the data are sufficiently reliable for the interpretative requirements of this study.

There may be a slight bias between SLI and EPA but it is not significant as related to the interpretative requirements of this study.

6.3 Fish Samples

The determination of the degree of DDTR contamination of fish in Indian Creek and the Tennessee River was a major goal of

section 5.1. SLI-EPA split sample data were available for macroinvertebrates, aufwuchs, and plants and are shown in Tables 46-48. For macroinvertebrates, three samples had a mean relative error of -51 percent (EPA 1.68 times SLI). For aufwuchs, one sample had a relative error of -34 percent (EPA 1.41 times SLI). For plants, six samples had a mean relative error of -32 percent (EPA 1.38 times SLI).

- 5.5.3 Special Studies
- 5.5.3.1 Use of Glass Fiber Filters
- 5.5.3.1.1 Objective--Because of the small sample sizes of zooplankton, it was necessary to filter the zooplankton samples to obtain sample weights which were used in the calculation of DDTR concentrations. The objective of this study was to determine if DDTR could be measured in zooplankton which had been retained on glass fiber filters.
- 5.5.3.2 Experimental Design and Results

  A spiked water sample was filtered through a glass fiber filter. After filtering, the filter was disintegrated in the filtrate with a polytron blender. The blended filtrate was then analyzed for DDTR, and 82 percent of the original DDTR was recovered without significant interferences.
- 5.5.3.3 Conclusion

It was agreed by the Corps of Engineers (Diane Finley) on October 31, 1979, that the zooplankton samples from Task 5 could be prepared for DDTR analysis using tared glass fiber filters.

this study. Of particular interest was to determine whether the filet DDTR concentration exceeded 5  $\mu$ g/g. The analytical precision, as measured by blind split samples, indicates that for a single analytical determination on a fish filet having 5 ppm DDTR, one can expect a 95 percent confidence bound of 2.6 to 9.6 ppm. Thus, for filet sample results that fall into this range, one cannot say (with 95 percent confidence) if the true value is above or below 5 ppm.

Analytical results for whole body samples seemed to have an even wider confidence bound.

The split sampler between EPA and SLI showed that the SLI results were biased low compared to EPA. On the average, EPA results are about 1.27 times higher than SLI results. This excludes one group of data generated by SLI where EPA results averaged about 3 times higher than SLI results. All data from this group have been marked in the data tables.

When interpreted in light of the noted limitations, these data provide useful information regarding the degree of DDTR contamination of fish in the study area.

6.4 Vertebrate (Excluding Fish) Samples

5 8 12 14 Mills

The vertebrate sample blind splits indicate significant variability within SLI. Further, the EPA-SLI splits showed the SLI data to be lower on average by about a factor of four as compared to EPA data. Reruns by SLI of some of these samples showed an even more pronounced low bias as compared to EPA. The variability and significantly low bias compromise

the usefulness of this data. However, lack of sufficient sample to allow for complete reanalysis and higher priorities for other samples led to the decision to retain the original results.

# 6.5 Aquatic Organisms and Plants

The relatively small data base only provides limited information concerning intralaboratory variability. Samples split between SLI and EPA indicate a low bias for SLI as compared to EPA. These factors are not expected to significantly affect the interpretative aspects of this work.

TABLES

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#### **TABLES**

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Table 1. EPA Intralaboratory Accuracy and Precision Data

	DI	T	DI	)D	DI	)E
Sample type	0,P'	P,P	0,P1	P,P	0,P'	P, P
Fish						
Average % recovery	76	80	55	71	52	61
Average % RSD <sup>b</sup>	37	30	35	26	25	14
Sediment						
Average % recovery	ND <sup>C</sup>	ND	ND	ND	ND	ND
Average % RSD	ND	36	25	37	7.7	37
Water						
Average % recovery	100	110	94	110	100	110
Average % RSD	ND	ND	6.7	8.2	7.2	5.3

 $<sup>^{\</sup>mathrm{a}}$ Percent recovery based on spiked reagent blank analyzed with sample types noted.

 $<sup>^{\</sup>mathrm{b}}\mathrm{RSD}$  - Relative standard deviation.

<sup>&</sup>lt;sup>C</sup>RD - No data.

Table 2. Tabulation of SLI Intralaboratory Blind Aqueous Reference Sample Data

Analyzed with SLI project		ERA Certified value	SLI Observed value	%
number	Parameter	(µg/1)	(μ <b>g</b> /l)	Recovery
m. 00506	a ni nns	0.60	0.71	107
TVA 09586	O,P' DDE	0.60	0.64 0.58	107 92.1
mr. 00/05	P,P' DDD	0.63 0.31	0.38	90.3
TVA 09695	P,P' DDT	0.19	0.19	100
m. 003//	O,P' DDD O,P' DDT	0.19	0.19	84.6
TVA 09746	P,P' DDE	0.50	0.41	82.0
TUA 0070/		0.31	0.26	84.6
TVA 09784	P,P' DDT O,P' DDD	0.19	0.15	78.9
TUA 00052	P,P' DDD	1.3	1.1	84.6
TVA 09853 TVA 09833	P,P' DDD	1.3	1.1	84.6
TVA 09746	O,P' DDT	0.31	0.26	83.9
IVA 09/40	P,P' DDE	0.19	0.15	78.9
TVA 09993	O,P' DDT	0.26	0.13	69.2
1VA 03333	P,P' DDE	0.50	0.43	86.0
TVA 10021	O,P' DDT	0.55	0.47	85.5
TVA 10021	P,P' DDE	0.42	0.33	78.6
TVA 10054	O,P' DDE	0.60	0.57	95.0
1VA 10034	P,P' DDD	0.63	0.55	87.3
TVA 10055	P,P' DDD	1.3	1.2	92.3
TVA 10055	P,P' DDT	0.31	0.24	77.4
14% 10007	O,P' DDT	0.19	0.24	126
TVA 10069	O,P' DDE	0.60	0.70	106
14/( 1000)	P,P' DDD	0.63	0.71	113
TVA 10102	O,P' DUE	0.60	0.46	76.7
1VA 10102	P,P' DDD	0.63	0.50	79.4
TVA 10103	O,P' DDT	0.26	0.19	73.1
11/1/ 10105	P.P' DDE	0.50	0.37	74.0
TVA 10105	P,P' DDT	0.31	0.28	90.3
144 10103	O,P' DDD	0.19	0.19	100
TVA 10107	P,P' DDD	1.3	1.0	76.9
TVA 10119	P,P' DDT	0.31	0.37	119
1111 10117	O,P' DDD	0.19	0.17	89.5
TVA 10173	O,P' DDE	0.60	0.52	86.7
	O,P' DDE	0.63	0.51	81.0
TVA 10278	O,P' DDE	0.60	0.55	91.7
100,0	P,P' DDD	0.63	0.70	111
TVA 10383	O.P' DDT	0.26	0.25	96.2
	P,P' DDE	0.50	0.61	122

Table 2 (continued)

Analyzed with SLI project number	Parameter	ERA Certified value (µg/l)	SLI Observed value (µg/l)	% Recovery
TVA 10384	P,P' DDT	0.31	0.28	90.3
	O,P' DDD	0.19	0.15	78.9
TVA 10393	O,P' DDT	0.26	0.27	104
	P,P' DDE	0.50	0.54	108
TVA 10467	P.P' DDD	1.3	1.4	108
TVA 10633	O.P' DDT	0.26	0.25	96.2
	P,P' DDE	0.50	0.53	106
TVA 10679	P,P' DDT	0.31	0.33	106
and TVA 10680	O,P' DDD	0.19	0.23	121

Table 3. Summary of TVA Project ID's

			Matrix Tasks*	sks*	
				Zooplankton Benthos	
SLI Project	Sediment	Water	Fish	Aufwuch	Vertebrates
	3, 4	က	-		
	4	9			
	4, 6	9			
			15-128		
			IA-IE		
TVA 09746	9 , 4	4,6			
		'n			
		S1-S7			
		9	٠		
	3, 6	9	-		
		5			
	S	~		S	7
			-		
	4				
	4				
			1, 1M		
		9			
					7
			1		
					7
		W5			
		М7			
	3	3M, 4			

Table 3 (continued)

			Matrix Task.*	X.*	
			1	Zooplankton Benthos Plants	
SLI Project	Sediment	water	Fish	Aurwuch	verteorates
TVA 10107			1M, 2M		
TVA 10117			7		
TVA 10118	9				
TVA 10119		ЭЖ			
TVA 10133					
TVA 10141	W7				
TVA 10142	9				
TVA 10143			-		
TVA 10171			-		
TVA 10172					7
TVA 10173			-		
TVA 10218	7				
TVA 10277			-		
TVA 10278				S.	
TVA 10329			-		
TVA 10383	9	9			
TVA 10384			1, 1M (Reanalyzed)	lyzed)	
TVA 10393		9			
TVA 10467	9				
TVA 10633			1, 1M (Reanalyzed)	1yzed)	
TVA 10679		9			
TVA 10680	9				

\* Numbers within the table indicate the samples from the various tasks that were analyzed for each SLI project number.

Table 4. Statistical Summary of SLI Blind Aqueous Reference Sample Data

lsomer	Number of observation	Mean recovery (%)	Standard deviation
O,P' DDT	10	91.5	16.3
P,P' DDT	7	94.0	14.0
O,P' DDD	6	94.7	16.0
P,P' DDD	10	92.9	12.5
O,P' DDE	7	92.0	11.6
P,P' DDE	9	93.5	17.1
Total DDTR	49	93.0	14.0

Table 5. Blind Split Total Water Data

TVA	Type +	) TOO	ug/1)	) qqq	90	DDE (	18/	Tota	Total DDTR (μg	(µg/1)
LAB ID	sample	0,P'	P,P'	0,P'	P, P'	0, P'	P, P'	Minimum	Average	Maximum
3-027	BLI	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020	00000	0.100	0.200
	ORI	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020	000.0	0.100	0.200
3-031	BLI	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020	0.00	0.100	0.200
	ORI	<0.040	<0.040	<0.040	<0.040	<0.020	0.020	0.000	0.100	0.200
4-036	BLI	<0.080	0.250	0.580	1.350	080.0	0.100	2.26	2.30	2.34
	ORI	<0.080	0.330	0.630	1.42	0.100	0.120	2.60	2.64	2.68
4-116	BLI	0.320	0.210	2.32	2.26	0.170	0.240	5.52	5.52	5.52
	ORI	0.320	0.220	2.10	2.05	0.180	0.240	5.11	5.11	5.11
4-124	BLI	3.93	215	85.4	60.7	10.1	15.7	391	391	391
	ORI	3.88	208	79.7	59.0	10.1	14.6	375	375	375
6M-03	BLI	0.300	3.80	1.76	3.42	0.310	0.740	10.3	10.3	10.3
	ORI	0.370	4.11	1.99	3.80	0.430	0.980	11.7	11.7	11.7
60-W9	BLI	0.160	1.37	1.20	2,32	0.280	0.580	5.91	5.91	5.91
	ORI	0.200	1.72	1.70	2.65	0.350	0.840	7.46	7.46	7.46

\* BLI - Blind sample. ORI - Regular original sample.

Table 6. Blind Split Filtered Water Data

TVA	Type +	DDT	$(\mu g/1)$	DDD	(ug/1)	DDE	(ug/1)	Tota	Total DDTR (pg/1	(1)
LAB ID	sample	0, P'	P, P'	0,P'	P, P'	0, P'	Р, Р'	Minimum	Average	Maximum
3M-06	BLI	<0.080	<0.080	<0.080		<0.040	<0.040	000.0	0.200	0.400
	ORI	<0.080	<0.080	<0.080	<0.080	<0.040	<0.040	000.0	0.200	0.400
6-011	BLI	<0.080	<0.080	<0.440	0.760	0.000	0.090	1.380	1.460	1.540
	ORI	<0.080	<0.080	<0.510	0.850	0.100	0.100	1.560	1.640	1.720
6-025	BLI	<0.080	<0.080	0.790	1.780	0.130	0.130	2.830	2.870	2.990
	ORI	<0.080	<0.080	0.820	1.820	0,140	0.130	2.910	2.990	3.070
<b>6-074</b>	BLI	0.110	<0.080	1.920	2.790	0.230	0.360	5.410	5.450	5.490
	ORI	0.140	<0.080	2.110	3.370	0.250	0.370	6.240	6.280	6.320
6-078	BLI	<0.080	<0.080	<0.080	060.0	<0.040	<0.046	0.000	0.250	0.410
	ORI	<0.080	<0.080	<0.080	0.080	<0.040	<0.040	0.080	0.240	0.400
6-082	BLI	<0.080	<0.080	<0.080	<0.080	<0.040	<0.040	000.0	0.200	0.400
	ORI	<0.080	<0.080	<0.080	<0.080	<0.040	<0.040	0000	0.200	0.400
980-9	BLI	<0.080	<0.080	<0.080	<0° 080	<0.040	<0.040	000.0	0.200	0.400
	ORI	<0.080	<0.080	<0.080	0 <b>80 °</b> 0>	<0.040	<0.040	000.0	0.200	0.400
6-111	BLI	<0.080	<0.080	0.630	1.020	0.130	0.220	2.000	2.080	2.160
	ORI	<0.080	<0.080	0.540	0.900	0.110	0.200	1.750	1.830	1.910
6-127	BLI	<0.080	<0.080	0.890	1.660	0.120	0.190	2.860	2.940	3.020
	ORI	<0.080	<0.080	0.820	1.660	0.120	0.180	2.780	2.860	2.940
6-137	BLI	<0.080	<0.080	0.640	1.030	0.050	0.100	1.820	1.900	1.980
	ORI	<0.080	<0.080	0.620	1.020	0.000	0.000	1.800	1.880	1.960
6-158	BLI	<0.080	<0.080	0.870	1.180	0.110	0.210	2.370	2.450	2.530
	ORI	<0.080	<0.080	0.890	1.140	0.110	0.220	2,360	2.44	2.52
6-170	BLI	<0.080	°0°0°0°	<0.080	<0.080	<0.040	<0.040	000.0	0.200	0.400
	ORI	<0.080	<b>080.0</b>	<0.080	<0.080	<0.040	<0.040	000.0	0.200	0.400
6-182	BLI	<0.080	<0.080	<0.080	<0.080	<0.040	<0.040	0000	0.200	0.400
	ORI	<0.080	<0.080	<0.080	<0.080	<0.040	<0.040	000.0	0.200	0.400
6-214	BLI	<0.080	<b>080°0</b>	0.350	0.640	0.000	0.130	1.190	1.270	1.350
	ORI	<0.080	<0°080	0.420	0.760	0.080	0.140	1.400	1.480	1.560
6-222	BLI	<0.080	<0°080	0.580	1.080	0.070	0.100	1.830	1.910	1.990
	ORI	<0.080	< <b>0.</b> 080	0.630	2.730	0.080	0.110	3.550	3,630	3.710
6-269	BLI	<0.080	<0.080	0.290	0.520	0.040	090.0	0.910	0.990	1.070
	ORI	<0.080	<0.080	0.360	0.640	0.040	0.080	1.120	1,200	1.280

Table 6 (continued)

LAB ID 6-279 6-289	K 0 [ 0.400		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	מממ		DOK	(ng/1)	3) 7	\	<b>1</b>
6-279	Sample	0,P'	P, P'	0,P'	P, P'	0,P'	P,P'	Minimum	Average	Maximum
6-289	BLI	<0.080	<0.080	0.450	0.680	0.090	0.100	1.320	1.400	1.480
6-289	ORI	<0.080	<0.080	0.450	0.890	090.0	0.080	1.480	1.560	1.640
	BLI	<0.080	<0.080	0.850	1.650	0.140	0.210	2.850	2.930	3.010
	ORI	<0.080	<0.080	0.820	1.000	0.150	0.210	2.180	2.260	2.340
707-9	BLI	<0.100	<0.100	0.700	1.250	0.460	0.320	2.730	2.830	2.930
	ORI	<0.100	<0.100	0.920	1.390	0.500	0.370	3.180	3.280	3.380
6-414	BLI	<0.100	<0.100	0.620	0.820	<0.100	0.100	1.540	1.690	1.840
	ORI	<0.100	<0.100	0.420	0.820	<0.100	<0.100	1.240	1.440	1.640
6-428	BLI	<0.100	<0.100	0.370	0.590	<0.100	<0.100	0.960	1.160	1.360
	ORI	<0.100	<0.100	0.440	0.600	<0.100	<0.100	1.430	1.630	1.830
6-438	BLI	<0.100	<0.100	0.650	0.960	<0.100	<0.100	1.610	1.810	2.010
	ORI	<0.100	<0.100	0.630	0.750	<0.100	<0.100	1.380	1.580	1.780
6-448	BLI	0.100	<0.100	<0.670	0.890	0.100	0.100	1.560	1.760	1.960
	ORI	<0.100	<0.100	0.510	0.820	<0.100	<0.100	1.330	1.530	1.730
9-456	BLI	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0000	0.300	0.600
	ORI	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0000	0.300	0.600
997-9	BLI	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0.000	0.300	0.600
	ORI	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0000	0.300	0.600
90-M9	BLI	090.0	0.070	0.930	1.500	0.170	0.290	3.020	3.020	3.020
	ORI	0.050	0.040	0.850	1.310	0.150	0.200	2.600	2.600	2.600
6M-13	BLI	0.070	0.250	0.950	1.250	0.110	0.160	2.790	2.790	2.790
	ORI	0.080	0.310	1.080	1.410	0.150	0.210	3.240	3.240	3.240

Table 6 (continued)

TVA	Type,	Tag	(µg/1)	) 000	(µg/1)	) JOE (	(µg/1)	Total	11 DDTR (ug/1)	(1/1)
LAB 1D	sample	0, P.	P.F.	0, P.	P.P.	0, 1	7,1	Minimum	Average	Maximum
6M-30	BLI	<0.020	<0.030	0.190	0.320	0.030	0.050	0.590	0.615	0.640
	ORI	<0.020	<0.030	0.210	0.360	0.030	0.050	0.650	0.675	0.700
97-W9	BLI	0.050	0.100	0.480	0.810	060 0	0.140	1.670	1.670	1.670
	ORI	0.030	0.040	0.490	0.760	0.080	0.160	1.560	1.560	1.560
6M-56	BLI	<0.020	0.050	0.250	0.430	0.040	0.000	0.840	0.850	0.860
	ORI	0.030	0.070	0.290	0.430	0.040	0.000	0.930	0.930	0.930
6M-78	BLI	<0.020	<0.030	<0.010	0.030	<0.010	<0.010	0.030	0.000	0.110
	ORI	<0.020	<0.030	<0.010	0.030	<0.010	<0.010	0.030	0.00	0,110
7-028	BL1	<0.020	0,040	0.251	0.494	090.0	0.101	0.946	0.956	0.966
	ORI	<0.030	0.040	0.285	0.481	090.0	0.117	0.983	0.998	1.013
7-052	BLI	<0.030	0.070	0.257	0.451	090.0	0.100	0.938	0.953	0.968
	ORI	<0.030	0.050	0.301	0.508	090.0	0.108	1.027	1.042	1.057
7-072	BLI	<0.020	<0.030	<0.010	0.010	<0.010	<0.010	0.010	0.050	0.000
	ORI	<0.020	<0.030	<0.010	0.010	<0.010	<0.010	0.010	0.050	0.000
2-090	BLI	0.020	0.030	0.199	0.478	0.050	0.070	0.847	0.847	0.847
	ORI	<0.020	0.030	0.221	0.420	0.050	0.105	0.826	0.836	0.846
7-116	BLI	<0.020	<0.030	0.187	0.426	0.050	0.060	0.723	0.748	0.773
	ORI	<0.020	<0.030	0.185	0.365	0.050	0.070	0.670	0.695	0.720
7-146	BLI	<0.040	<0.050	0.100	0.227	0.030	090.0	0.417	0.462	0.507
	ORI	<0.020	0.030	0.122	0.256	0.040	0.050	0.498	0.508	0.518
7-166	BLI	<0.040	<0.050	0.122	0.238	0.030	<0.020	0.390	0.445	0.500
	ORI	<0.040	<0.050	0.137	0.249	0.030	0.050	0.466	0.511	0.556

\* BLI - Blind sample. ORI - Regular original sample.

Table 7. Tabulation of Interlaboratory "Pooled" Water Sample Data

TVA			(µg/1)		μ <b>g/</b> 1)		(μ <b>g/1</b> )	Total DDTR (min)
LAB ID	Lab	0,P'	P,P'	0,P'	P,P'	0,P'	P, P'	(μ <b>g</b> /1)
S-IRR	SLI	5.00	5.44	<0.2	3.98	3.13	3.41	21.0
S-1RR S-6RR		3.80	3.70	0.09	3.70	2.70	3.20	17.2
	SLI					2.86	2.58	15.0
S-7RR	SLI	2.74	3.63	<0.2	3.17			
S-8RR	SLI	2.58	3.12	<0.2	2.80	2.04	2.26	12.8
S-9RR	SLI	3.10	3.70	<0.2	3.40	2.25	2.65	15.1
S-10RR	EPA	2.60	2.50	<0.6	2.70	2.50	2.10	12.4
S-11RR	EPA	2.40	2,40	<0.6	2.90	2,40	2.00	12.1
S-12RR	EPA	2.90	3.30	<0.1	3.30	2,80	2.50	14.8
S-13RR	EPA	3.70	3.90	<0.7	4.10	3.50	3.30	18.5
S-14RR	SLI	3.12	3.59	<0.2	3.36	2.54	2.81	15.4
S-15RR	SLI	2.41	2.93	<0.2	2.72	1.98	2.13	12.2
S-16RR	SLI	2.93	3.27	<0.2	3.18	2.16	2.96	14.5
S-17RR	SLI*	3.83	4.23	<0.2	3.91	2.79	3.28	18.0
S-18RR	SLI*	4.38	4.81	<0.2	4.30	3.16	3.51	20.2
S-19RR	SLI*	3.91	4.23	<0.2	3.72	2.79	3.15	17.8
S-20RR	SLI*	4.58	4.99	<0.2	4.49	3.34	4.01	21.4
S-21RR	EPA	3.30	3.60	<0.3	3.80	3.10	2.90	16.7
S-22RR	EΡΛ	3.50	3.70	<0.3	3.80	3.30	3.10	17.4
S-23RR	EPA*	4.40	4.70	0.077		4.30	3.80	22.3
S-24RR	EPA*	4.00	4.30	0.042		4.00	3.60	20.3
S-25RR	SLI*	4.45	4.65	0.110		3.24	3.77	20.5
S-26RR	SLI*	4.66	4.80	0.11	4.55	3.37	3.90	21.4
S-27RR	SLI*	4.06	4.24	0.13	4.17	2.90	3.36	18.9

 $<sup>^{\</sup>star}$ Analytical procedure changed to include the addition of salt before extraction.

Table 8. SLI-EPA Split Water (Total) Data

TVA LAB ID	Lab	DDT (µg/l) O,P' P,P'	DDD (µg/1) O,P' P,P'	DDE (μg/1) O,P' P,P'	Total DDTR (µg/1) Min Avg Max
3-002	EPA	<0.080 <0.080 <0.040	<0.030 <0.030 <0.040 <0.040	<0.020 <0.020 <0.020 <0.020	0.000 0.130 0.260 0.000 0.100 0.200
3-004	SLI EPA	<0.008 <0.008	<0.003 <0.003	<0.002 <0.002	0.000 0.100 0.200
3-004	SLI	<0.040 <0.040	<0.040 <0.040	<0.020 <0.020	0.000 0.100 0.200
3M-02	EPA	<0.050 0.180	<0.100 <0.400	<0.050 <0.100	0.180 0.530 0.880
3 02	SLI	<0.080 0.280	<0.080 0.097	<0.040 <0.040	0.377 0.499 0.617
3M-04	EPA	<0.030 0.021	<0.100 <0.400	<0.050 0.100	0.021 0.361 0.701
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 0.040	0.000 0.200 0.400
3M-06	EPA	<0.050 0.071	<0.100 <0.400	<0.050 <0.100	0.071 0.421 0.771
	SLI	<0.080 0.230	<0.080 0.053	<0.040 <0.040	0.283 0.403 0.523
3M-09	EPA	<0.020 0.076	<0.100 <0.400	<0.050 <0.100	0.076 0.411 0.746
	SLI	<0.080 0.120	<0.080 <0.080	<0.040 <0.040	0.120 0.280 0.440
5-170	EPA	<0.050 0.200	<0.100 <0.400	<0.050 <0.100	0.200 0.550 0.900
	SLI	0.051 0.20	0.041 0.041	0.041 0.020	0.394 0.394 0.394
6-011	EPA	0.170 1.70	2.40 7.30	0.890 1.30	13.8 13.8 13.8
	SLI	<0.080 0.960	1.120 3.66	0.490 0.88	7.11 7.15 7.19
6-013	EPA	0.160 1.20	2.30 6.80	0.920 1.30	12.78 12.78 12.78
	SLI	<0.080 0.900	1.940 3.42	0.500 0.88	7.64 7.68 7.72
6-017	EPA	0.150 0.220	2.40 6.40	0.720 0.890	10.8 10.8 10.8
	SLI	0.090 0.250	1.58 2.84	0.340 0.470	5.57 5.57 5.57
6-033	EPA	<0.040 <0.500	0.044 0.067	0.009 0.019	0.139 0.409 0.679
	SLI	0.370 1.62	4.66 6.47	0.730 1.45	15.3 15.3 15.3
6-078	EPA	0.021 < 0.050	0.024 0.097	<0.030 0.011	0.153 0.193 0.233
	SLI	<0.080 <0.080	<0.080 0.080	<0.040 <0.040	0.080 0.240 0.400
6-103	EPA	<0.400 2.20	2.50 5.70	1.20 1.60	13.2 13.4 13.6
	SLI	0.170 4.03	4.64 8.79	1.16 2.09	20.9 20.9 20.9
6-125	EPA	<0.300 2.30	2.30 4.40	0.680 1.30	11.0 11.2 11.3
	SLI	<0.090 1.47	2.44 4.61	0.430 1.14	10.1 10.2 10.2
6-139	EPA	<0.600 4.00	3.60 6.90	1.30 1.80	17.6 17.9 18.2
	SLI	0.430 5.10	3.11 5.30	0.550 1.22	15.7 15.7 15.7
6-156	EPA	<0.300 1.10	1.10 2.10	0.300 0.500	5.10 5.25 5.40
( )70	SLI	0.100 1.30	1.24 1.79	0.180 0.430	5.04 5.04 5.04
6-172	EPA	<0.010 <0.010	<0.009 <0.009	<0.008 <0.008 <0.040	0.000 0.027 0.054
6 212	SLI	<0.080 <0.080	<0.080 <0.040		0.000 0.200 0.400
6-212	EPA	<0.300 0.280	1.10 2.30 1.03 1.96	0.420 0.600 0.280 0.480	4.70 4.85 5.00 4.15 4.19 4.23
4 222	SLI	<0.080 0.400			12.7 12.9 13.0
6-222	EPA	0.300 2.80 0.100 1.29	2.20 5.90 1.12 3.13	0.720 1.10 0.380 0.500	6.52 6.52 6.52
6 220	SLI				
6-230	EPA	0.360 1.80	4.40 7.10	0.980 2.00	16.6 16.6 16.6
	SLI	0.440 2.86	3.19 6.7	0.900 1.36	15.4 15.4 15.4

Table 8 (continued)

TUA		DDT (/1)	DDD (112/1)	DDE (112/1)	Total DDTR (µg/1)
TVA	1.4	DDT (µg/1)	DDD (µg/l) O,P' P,P'	DDE (μg/l) O,P' P,P'	
LAB ID	Lab	O,P' P,P'	0,P' P,P'	0,r r,r	Min Avg Max
6-251	EPA	<0.300 <0.300	<0.200 <0.200	<0.100 <0.100	0.000 0.600 1.20
	SLI	<0.080 <0.080	<0.080 <0.080	<0.40 <0.040	0.000 0.200 0.400
6-259	EPA	<0.300 <0.300	<0.200 <0.200	<0.100 <0.100	0.000 0.600 1.20
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400
6-267	EPA	<0.300 0.300	1.50 3.40	0.560 1.00	6.76 6.81 7.06
	SLI	<0.080 1.36	1.630 2.330	0.560 0.810	5.69 6.73 6.77
6-277	EPA	<0.300 6.30	2.00 5.20	0.690 1.30	15.5 15.6 15.8
	SLI	0.190 3.52	1.89 2.81	0.410 1.00	9.82 9.82 9.82
6-287	EPA	<0.300 1.30	1.70 3.40	0.380 0.740	7.52 7.67 7.82
	SLI	0.250 0.930	2.04 2.77	0.300 0.490	6.78 6.78 6.78
6-412	EPA	<0.100 0.130	0.640 1.20	0.160 0.210	2.34 2.39 2.44
	SLI	<0.100 0.330	0.700 1.20	0.190 0.290	2.71 2.76 2.81
6-434	EPA	0.061 0.460	0.560 1.10	0.140 0.220	2.54 2.54 2.54
	SLI	<0.100 0.830	0.700 1.31	0.280 0.300	3.42 3.47 3.52
6-442	EPA	0.180 1.20	1.00 1.90	0.240 0.460	4.98 4.98 4.98
	SLI	<0.100 0.41	0.890 1.43	0.740 0.320	3.89 3.94 3.99
6-466	EPA	<0.050 <0.050	<0.100 <0.400	<0.050 <0.200	0.000 0.425 0.850
	SLI	<0.100 <0.100	<0.100 <0.100	<0.100 <0.100	0.000 0.300 0.600
6M-01	EPA	<0.300 <0.600	0.880 1.60	0.240 0.350	3.07 3.52 3.97
	SLI	0.200 0.260	1.30 2.11	0.270 0.540	4.68 4.68 4.68
6M-02	EPA	<0.400 1.400	1,700 3.20	0.470 0.720	7.49 7.49 7.49
	SLI	0.200 2.99	2.26 4.28	0.450 1.01	11.2 11.2 11.2
6M-03	EPA	0.220 2.40	1.30 2.70	0.360 0.600	7.58 7.58 7.58
	SLI	0.360 4.10	1.98 3.80	0.430 0.980	11.6 11.6 11.6
6M-04	EPA	<0.200 <0.400	<0.100 <0.100	<0.100 <0.120	0.000 0.500 1.00
	SLI	<0.060 <0.060	0.100 0.180	0.030 0.020	0.330 0.390 0.450
5-001A	EPA	<0.300 <0.300	1.30 2.80	0.310 0.520	4.93 5.23 5.53
	SLI	<0.080 0.090	1.12 2.26	0.220 0.360	4.05 4.09 4.13
5-002A	EPA	<0.400 <0.400	0.750 1.50	0.190 0.270	2.71 3.11 3.51
	SLI	<0.080 <0.080	0.710 1.10	0.130 0.210	2.15 2.23 2.31
5-015A	EPA	<0.300 <0.300	<0.200 <0.200	<0.100 <0.100	0.000 0.600 1.20
	SLI	<0.080 <0.080	<0.080 0.090	<0.040 <0.040	0.090 0.250 0.410
5-018A	EPA	<0.200 0.270	3.50 5.10	0.710 1.40	11.0 11.1 11.2
	SLI	0.470 0.210	3.46 6.44	0.500 1.60	12.7 12.7 12.7
5-032A	EPA	<0.400 <0.400	<0.200 <0.200	<0.100 <0.100	0.00 0.700 1.40
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400
5-033A	EPA	<0.400 <0.400	<0.200 <0.200	<0.100 <0.100	0.000 0.700 1.40
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400
5-034B	EPA	<0.400 <0.400	<0.200 <0.200	<0.100 <0.100	0.000 0.700 1.40
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400

Table 9. SLI-EPA Split Water (Suspended Solids) Data

		27057			(ma)	TOO DOWNED	nana (ant			
TVA		t) Taa	(µg/1)	) aga	'ug/1)	ம	(µg/1)	Te	Total DDTR	(µg/1)
LAB ID	Lab	0,P'	P,P'	0,P'	P, P'	0,P'	P, P'	Min		Max
6M−01	EPA		<0.350	0.360	0.700	0.157	0.262	1.48	1.37	2.06
	SLI		0.196	0.456	0.788	0.131	0.326	1.90	1.94	1.99
6M-02	EPA	<0.248	1.69	0.930	2.19	0.390	0.761	5.97	60.9	6.22
	SLI		2.74	1.20	2.95	0.379	0.926	8.33	8.33	8.33
<b>6M-</b> 03	EPA		2.26	0.680	1.91	0.262	0.552	5.6	5.77	5.88
	SLI		2.50	0.965	2.49	0.292	0.767	7.18	7.18	7.18
6M-04	EPA		<0.378	<0.150	<0.150	0.113	0.076	00000	0.547	1.09
	sri		<0.126	<0.054	<0.036	0.036	0.036	0.00	0.189	0.378
6M-22	EPA		0.085	0.160	0.310	0.072	0.133	0.760	0.785	0.811
	SLI		0.159	0.241	0.327	0.072	0.170	0.993	0.993	0.993
6M-38	EPA		0.094	0.160	0.300	0.067	0.124	0.745	0.772	0.799
	SLI		0.367	0.274	0.355	0.000	0.190	1.28	1.28	1.29
6M-42	EPA		0.332	0.230	0.530	0.097	0.198	1.64	1.64	1.64
	SLI		0.638	0.426	0.627	0.143	0.315	2.21	2.21	2.21
09-W9	EPA		1.00	0.300	0.670	0.124	0.258	2.43	2.43	2.43
	SLI		0.910	0.492	0.852	0.166	0.357	2.88	2.88	2.88
99-W9	EPA		0.083	0.110	0.220	0.044	0.000	0.593	0.593	0.593
	SLI		0.408	0.175	0.276	0.053	0.125	1.06	1.06	1.06
6M-74	EPA		0.040	0.020	0.040	0.016	0.010	0.161	0.161	0.161
	SLI		<0.060	<0.040	0.060	<0.040	0.030	0.090	0.185	0.280
6M-82	EPA		<0.081	<0.032	<0.032	<0.016	<0.016	0.000	0.113	0.226
	SLI		<0.018	<0.020	<0.020	<0.011	<0.011	0.00	0.040	0.080
67-38	EPA		1.80	0.34	1.1	0.150	0.450	3.98	3.98	3.98
	SLI		1,33	0.41	1.06	0.13	0.37	3,30	3.32	3,35
04-19	EPA		0.630	0.200	0.650	0.100	0.230	1.89	2.89	2.89
	SLI		0.77	0.24	0.71	0.08	0.25	2.06	2.08	2.11
67-42	EPA		1.30	0.210	0.690	0.110	0.250	2.64	2.64	2.64
	SLI		1.02	0.22	0.48	0.10	0.25	2.07	2.10	2.12

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Table 9 (continued)

EPA         0,P¹         P,P¹         0,P¹         P,P¹         Min           EPA         0,061         0,980         0,200         0,570         0,110         0,240         2,16           SLI         <0.055	TVA			(1/0/1)	) עשע	117	טיים	0(1)		Total name	
EPA 0.061 0.980 0.200 0.570 0.110 0.240 SLI \$\text{c.0.05}\$ 0.50 0.23 0.60 0.07 0.23 \$\text{EPA}\$ 0.090 1.60 0.250 0.690 0.120 0.290 SLI \$\text{c.0.05}\$ 1.52 0.24 0.70 0.08 0.27 SLI \$\text{c.0.05}\$ 1.34 0.210 0.930 0.110 0.260 SLI \$\text{c.0.05}\$ 0.810 0.180 0.650 0.100 0.220 SLI \$\text{c.0.05}\$ 0.97 0.20 0.57 0.08 0.26 SLI \$\text{c.0.06}\$ 0.620 0.180 0.760 0.100 0.230 SLI \$\text{c.0.06}\$ 0.62 0.20 0.68 0.06 0.180 SLI \$\text{c.0.06}\$ 0.052 0.180 0.730 0.089 0.180 SLI \$\text{c.0.05}\$ 0.022 0.18 0.31 0.05 0.180 SLI \$\text{c.0.06}\$ 0.022 0.18 0.31 0.05 0.180 SLI \$\text{c.0.06}\$ 0.022 0.18 0.31 0.05 0.150 SLI \$\text{c.0.06}\$ 0.022 0.18 0.31 0.05 0.150 SLI \$\text{c.0.06}\$ 0.022 0.18 0.31 0.05 0.150 SLI \$\text{c.0.06}\$ 0.42 0.14 0.32 0.05	LAB ID	Lab	1	P, P,	0, P'	H8/1/ P,P'	a Í	-8/1/ P.P.		AVE	(µg/ 1) Max
SLI <0.05 0.50 0.23 0.60 0.07 0.23  EPA 0.090 1.60 0.250 0.690 0.120 0.290  SLI <0.05 1.52 0.24 0.70 0.08 0.27  EPA 0.061 1.20 0.210 0.930 0.110 0.260  SLI <0.05 1.34 0.21 0.76 0.07 0.26  SLI <0.05 0.810 0.180 0.650 0.100 0.220  SLI <0.05 0.97 0.20 0.57 0.08 0.20  EPA 0.047 0.620 0.180 0.760 0.100 0.230  SLI <0.06 0.62 0.20 0.68 0.06 0.21  EPA 0.039 0.710 0.150 0.730 0.089 0.180  SLI <0.05 0.022 0.18 0.31 0.05  EPA 0.033 0.390 0.130 0.370 0.073 0.150  SLI <0.06 0.42 0.14 0.32 0.05	67-44	EPA	0.061	0.980	0.200	0.570	0.110	0.240	2.16	2.16	2.16
EPA         0.090         1.60         0.250         0.690         0.120         0.290           SLI         <0.05         1.52         0.24         0.70         0.08         0.27           EPA         0.061         1.20         0.210         0.930         0.110         0.26           SLI         <0.05         1.34         0.21         0.76         0.07         0.26           SLI         <0.05         0.810         0.180         0.650         0.100         0.20           SLI         <0.05         0.97         0.20         0.57         0.08         0.26           SLI         <0.047         0.620         0.180         0.26         0.100         0.23           SLI         <0.05         0.010         0.150         0.760         0.180         0.180           SLI         <0.05         0.010         0.150         0.730         0.089         0.180           SLI         <0.05         0.022         0.18         0.31         0.05         0.150           SLI         <0.06         0.42         0.14         0.32         0.05         0.16		SLI	<0.05	0.50	0.23	0.60	0.07	0.23	1.62	1.65	1.68
SLI       <0.05	97-19	EPA	0.000	1.60	0.250	0.690	0.120	0.290	3.04	3.04	3.04
EPA         0.061         1.20         0.210         0.930         0.110         0.260           SLI         <0.05		SLI	<0.05	1.52	0.24	0.70	0.08	0.27	2,81	2.84	2.86
SLI       < 0.05       1.34       0.21       0.76       0.07       0.24         EPA       0.050       0.810       0.180       0.650       0.100       0.220         SLI       < 0.05       0.97       0.20       0.57       0.08       0.26         SLI       < 0.047       0.620       0.180       0.760       0.100       0.230         SLI       < 0.06       0.62       0.20       0.68       0.06       0.21         SLI       < 0.039       0.710       0.150       0.730       0.089       0.180         SLI       < 0.05       0.022       0.18       0.31       0.05       0.20         SLI       < 0.033       0.390       0.130       0.370       0.073       0.150         SLI       < 0.06       0.42       0.14       0.32       0.05       0.16	67-48	EPA	0.061	1.20	0.210	0.930	0.110	0.260	2.77	2.77	2.77
EPA         0.050         0.810         0.180         0.650         0.100         0.220           SLI         <0.05		SLI	<0.05	1,34	0.21	0.76	0.07	0.24	2,62	2.64	2.67
SLI       <0.05	67-50	EPA	0.050	0.810	0,180	0.650	0.100	0.220	2.01	2.01	2.01
EPA       0.047       0.620       0.180       0.760       0.100       0.230         SLI       <0.06       0.62       0.20       0.68       0.06       0.21         EPA       0.039       0.710       0.150       0.730       0.089       0.180         SLI       <0.05       0.022       0.18       0.31       0.05       0.20         EPA       0.033       0.390       0.130       0.370       0.073       0.150         SLI       <0.06       0.42       0.14       0.32       0.05       0.16		SLI	<0.05	0.97	0.20	0.57	0.08	0.26	2.09	2.12	2.14
SLI       <0.06       0.62       0.20       0.68       0.06       0.21         EPA       0.039       0.710       0.150       0.730       0.089       0.180         SLI       <0.05       0.022       0.18       0.31       0.05       0.20         EPA       0.033       0.390       0.130       0.370       0.073       0.150         SLI       <0.06       0.42       0.14       0.32       0.05       0.16	67-52	EPA	0.047	0.620	0.180	0,760	0.100	0.230	1.94	1.94	1.94
EPA 0.039 0.710 0.150 0.730 0.089 0.180 SLI <0.05 0.022 0.18 0.31 0.05 0.20 EPA 0.033 0.390 0.130 0.370 0.073 0.150 SLI <0.06 0.42 0.14 0.32 0.05 0.16		$S\Gamma$ I	<0°0>	0.62	0.20	0.68	90.0	0.21	1.77	1.80	1.83
SLI <0.05 0.022 0.18 0.31 0.05 0.20 EPA 0.033 0.390 0.130 0.370 0.073 0.150 SLI <0.06 0.42 0.14 0.32 0.05 0.16	67-54	EPA	0.039	0.710	0.150	0,730	0.089	0.180	1.90	1.90	1.90
EPA 0.033 0.390 0.130 0.370 0.073 0.150 SLI <0.06 0.42 0.14 0.32 0.05 0.16		SLI	<0.05	0.022	0.18	0.31	0.05	0.20	0.97	0.99	1.01
<0.06 0.42 0.14 0.32 0.05 0.16	67-56	EPA	0.033	0.390	0.130	0.370	0.073	0.150	1.15	1.15	1.15
		SLI	<0°0>	0.42	0.14	0,32	0.05	0.16	1.08	1.11	1.14

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Table 10. SLI-EPA Split Water (Filtered) Data

TVA		DDT (µg/l)	DDD (µg/1)	DDE (µg/1)	Total DDTR (µg/1)
LAB ID	Lab	0,P' P,P'	0,P' P,P'	0,P' P,P'	Min Avg Max
214 02	EDA	-0 005 0 057	<0.100 <0.400	<0.050 <0.100	0.057 0.384 0.712
3M~02	EPA SLI	<0.005 0.057 <0.080 <0.080	<0.080 0.086	<0.040 <0.040	0.086 0.246 0.406
3M-04	EPA	<0.020 0.013	<0.100 0.400	<0.050 <0.100	0.013 0.348 0.683
JN-04	SLI	<0.080 <0.080	<0.080 0.80	<0.040 <0.040	0.000 0.200 0.400
3M-06	EPA	<0.020 <0.020	<0.100 <0.400	<0.050 <0.100	0.000 0.345 0.690
JN-00	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400
3M~09	EPA	<0.020 0.028	<0.100 0.400	<0.050 <0.100	0.028 0.363 0.698
), i 0 )	SLI	<0.080 <0.080	<0.080 0.080	<0.040 <0.040	0.000 0.200 0.400
5-016A	EPA	<0.300 <0.300	<0.200 0.220	<0.100 <0.100	0.220 0.720 1.22
3 01011	SLI	<0.080 <0.080	0.120 0.220	0.040 0.040	0.380 0.480 0.580
5-017A	EPA	<0.300 <0.300	0.990 2.00	0.140 0.130	3.26 3.56 3.86
	SLI	<0.080 <0.080	0.900 1.58	<0.090 0.110	2.59 2.72 2.84
6M-01	EPA	<0.200 <0.400	0.450 < 0.800	<0.080 0.084	0.534 1.27 2.01
	SLI	0.150 0.070	0.730 1.37	0.170 0.130	2.62 2.62 2.62
6M-02	EPA	<0.200 <0.400	0.780 1.30	0.150 0.170	2.40 2.70 3.00
	SLI	0.140 0.080	1.27 2.41	0.170 0.240	4.31 4.31 4.31
6M-03	EPA	<0.200 <0.400	0.790 1.30	<0.200 0.220	2.31 2.71 3.11
	SLI	0.140 0.080	1.03 1.84	0.160 0.240	3.49 3.49 3.49
6M-04	EPA	<0.200 <0.400	<0.100 <0.100	<0.100 <0.100	0.000 0.500 1.00
	SLI	<0.060 <0.060	0.060 0.180	<0.020 <0.020	0.240 0.320 0.400
6M-22	EPA	<0.040 <0.080	0.470 0.840	0.093 0.087	1.49 1.55 1.61
	SLI	0.040 0.090	0.570 0.850	0.090 0.130	1.77 1.77 1.77
6M-38	EPA	<0.030 <0.080	0.360 0.630	0.071 0.074	1.14 1.24 1.24
	SLI	0.020 < 0.030	0.480 0.740	0.070 0.110	1.42 1.44 1.45
6M-42	EPA	<0.050 0.079	0.470 0.790	0.100 0.120	1.56 1.58 1.61
	SLI	0.030 0.050	0.510 0.770	0.080 0.130	1.57 1.57 1.57
6M-60	EPA	<0.110 <0.200	0.370 0.600	0.085 0.089	1.14 1.30 1.45
	SLI	0.020 0.040	0.340 0.510	0.050 0.090	1.05 1.05 1.05
6M-66	EPA	<0.050 <0.080	0.210 0.320	0.050 0.051	0.631 0.696 0.761
	SLI	<0.020 <0.030	0.110 0.170	0.020 0.020	0.320 0.345 0.370
6M-74	EPA	<0.050 <0.080	<0.030 <0.030	<0.020 0.020	0.000 0.115 0.230
(14 00	SLI	<0.020 <0.030	0.030 0.090	<0.010 0.010	0.120 0.147 0.190
6M-82	EPA	<0.050 <0.080	<0.030 <0.030	<0.020 <0.020	0.000 0.115 0.230
47 20	SLI	<0.020 <0.030	<0.010 0.040	<0.010 <0.010	0.040 0.080 0.120
67-38	EPA	0.047 0.120	0.390 0.580	0.071 0.120	1.33 1.33 1.33 1.37 1.37 1.37
67-40	SLI EPA	0.030 0.090 0.064 0.060	0.380 0.690 0.280 0.450	0.070 0.110 0.053 0.073	1.37 1.37 1.37 0.980 0.980 0.980
0/-40	SLI	0.020 0.060	0.280 0.480	0.050 0.080	0.970 0.970 0.970
67-42	EPA	0.047 0.051	0.300 0.450	0.060 0.100	1.01 1.01 1.01
07-42	SLI	0.020 0.050	0.290 0.500	0.060 0.090	1.01 1.01 1.01
67-44	EPA	0.028 0.058	0.250 0.380	0.053 0.070	0.839 0.839 0.839
J1-44	SLI	0.020 0.070	0.260 0.460	0.050 0.090	0.950 0.950 0.950
	0171	0.020 0.070	0.200 0.400	3.030 0.070	

Table 10 (continued)

TVA		DDT (μg/1)	DDD (µg/1)	DDE (µg/1)	Total DDTR (µg/1)
LAB ID	_Lab	0,P' P,P'	0,P' P,P'	0,P' P,P'	Min Avg Max
67-46	EPA	0.028 0.110	0.220 0.340	0.047 0.062	0.807 0.807 0.807
	SLI	0.020 0.080	0.230 0.400	0.050 0.080	0.860 0.860 0.860
67-48	EPA	0.027 0.081	0.250 0.380	0.050 0.070	0.858 0.858 0.858
	SLI	0.020 0.060	0.280 0.490	0.060 0.100	1.01 1.01 1.01
67-50	EPA	0.023 0.068	0.250 0.380	0.053 0.058	0.832 0.832 0.832
	SLI	0.010 0.100	0.230 0.450	0.050 0.080	0.920 0.920 0.920
67-52	EPA	0.028 0.043	0.280 0.420	0.055 0.062	0.888 0.888 0.888
	SLI	<0.020 0.050	0.300 0.510	0.060 0.110	1.03 1.04 1.05
67-54	EPA	0.023 0.033	0.240 0.420	0.053 0.070	0.839 0.839 0.839
	SLI	<0.020 0.030	0.220 0.350	0.050 0.070	0.720 0.730 0.740
67-56	EPA	0.021 < 0.030	0.200 0.290	0.044 0.048	0.603 0.618 0.633
	SLI	<0.020 <0.030	0.220 0.340	0.050 0.070	0.680 0.705 0.730
5~001A	EPA	<0.700 <0.700	0.560 1.00	<0.200 <0.200	1.56 2.46 3.36
	SLI	<0.080 <0.080	0.579 1.07	0.070 0.090	1.80 1.88 1.96
5~002A	EPA	<0.400 <0.400	0.470 0.840	<0.100 <0.100	1.31 1.81 2.31
	SLI	<0.080 <0.080	0.420 0.780	0.040 0.060	1.30 1.39 1.46
5-015A	EPA	<0.300 <0.300	<0.200 <0.200	<0.100 0.100	0.000 0.600 1.20
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400
5-018A	EPA	<0.030 <0.030	1.50 3.20	0.220 0.370	5.29 5.32 5.35
	SLI	0.120 < 0.080	1.53 2.74	0.160 0.280	4.83 4.87 4.91
5-033B	EPA	<0.700 <0.700	<0.400 <0.400	<0.200 <0.200	0.000 1.30 2.60
	SLI	<0.080 <0.080	<0.080 <0.080	<0.040 <0.040	0.000 0.200 0.400

Table 11. Special Study: Use of the Churn Splitter

TVA LAB ID	Nonfilterable residue <sup>a</sup> (µg/l)	DDT O,P'	(μg/l) P,P'	DDD O,P'	(μg/1) P,P'	DDE O,P'	(μg/1) P,P'	Total DDTR <sup>b</sup> (µg/1)
DDT 6-58	53	0.28	2.52	4.04	6.59	0.68	1.26	15.4
DDT 6-59	50	0.28	3.15	4.12	6.80	0.65	1.42	16.4
DDT 6-60	50	0.28	1.71	3.68	5.83	0.62	1.33	13.5
DDT 6-61	51	0.31	2.83	3.62	5.78	0.63	1.20	14.4
DDT 6-62	51	0.29	2.64	3.71	6.05	0.64	1.27	14.6
DDT 6-63	50	0.32	2.20	3.96	6.44	0.69	1.29	14.9
DDT 6-64	51	0.28	2.54	3.70	6.18	0.59	1.19	14.5
Mean	50.9	0.29	2.51	3.83	6.24	0.64	1.28	14.8
Standard deviation	1.07	0.02	0.46	0.20	0.39	0.03	0.08	0.90
% RSD <sup>C</sup>	2.1	5.8	18.3	5.3	6.2	5.4	6.2	6.1

<sup>&</sup>lt;sup>a</sup>Analysis performed by TVA Laboratory Branch.

b Analysis performed by SLI.

 $<sup>^{\</sup>mathrm{C}}\mathrm{RSD}$  - Relative standard deviation.

Table 12. Special Study: Use of Cellulose Membrane Filters

Isomer	Concentration before filtration (µg/l)	Concentration after filtration $(\mu g/1)$	% Recovery <sup>a</sup>
O,P' DDT	5.00	1.10	22.0
P,P' DDT	5.44,	1.00	18.4
O,P' DDD	5.44b ND	ND	-
P,P' DDD	3.98	2.23	56.0
O,P' DDE	3.13	0.65	20.8
P,P' DDE	3.41	0.28	8.2
Total DDTR	21.0	5.26	25.0

<sup>&</sup>lt;sup>a</sup>All analysis performe. by SLI.

b<sub>ND</sub> - not detected.

Table 13. Special Study: Extraction Efficiencies of DDTR from Suspended Solids

	Suspended	n	DT	% Rec	overy DD	n	DE	
Matrix	Solids (mg/L)	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	Total DDTR**
Deionized	73	*	33.7	54.4	59.3	42.5	31.1	43.7
water	370	*	70.0	50.4	54.1	32.7	28.6	45.9
	3700	57.1	72.1	51.5	57.1	31.1	28.2	47.4
Native water	73	*	35.1	13.8	37.0	23.5	16.5	25.3
	370	*	69.3	46.3	51.7	29.7	25.9	43.4
	3700	44.1	67.9	56.5	60.5	35.0	31.7	49.7

<sup>\*</sup>Below detection limit.

<sup>\*\*</sup>All analysis performed by SL1.

Table 14. Special Study: Comparison of DDTR Analysis on Total Water by Both Calculation and Direct Analysis

TVA LAB ID	Location	Date collected	Date Nonfilterable*	Filt. DDTR (ug/1) (with salt)	Suspended DDTR (µg/1)	Total DDTR calc. (µg/1)	Total DDTR** analyzed (µg/1) (without salt)	Ratio (total calc.) total analyzed
6M-1	ICM 0.9	1/18/80	57	2.62	1.90	4.52	4,68	0.97
6M-2	IC at Centerline Rd.		84	4.31	8,33	12.64	11.2	1.13
6M-3	HSB at Dodd Rd.	1/18/80	80	3.49	7,18	10.67	11.6	0.92
6M-4	HSB at Patton Rd.		42	0.24	<0°0>		0,33	1
6M-5	ICM 0.9		54	1.52	1.44	2.96	3.04	0.97
9-W9	ICM 0.9	•	77	2.60	1.05	3.65	3,36	1.09
6M-7	ICM 0.9	•	63	2.39	2.11	4.50	3.58	1.26
6M-8	ICM 0.9		54	1,58	1.62	3.20	2.15	1.49
6-M9	IC at Centerline Rd.		110	3.01	4.78	7.79	7.46	1.04
6M-10	IC at Centerline Rd.		1.00	3.99	8.34	12,33	8.44	1.46
							Average	1.15

\*Analysis performed by Laboratory Branch (TVA).

\*\*All analysis performed by SLI.

Table 15. Special Study: Filterable DDTR Both With and Without the Addition of Salt Before Extraction

TVA	Sample	Date	With or without salt addition		DDT P,P'	Filterable DDT DDD O,P' P,P' O,P' P,P'	terable DDD ' P.P'	DUIK 0,P	Filterable DDIK (µg/1) DDD DDF O,P' P,P' O,P' P,P'	Total*
LAB ID	Location	1/18/80	With	ì	0.07	0,15 0.07 0.73 1.37 0.17 0.13	1.37	0.17	0.13	2.62
1-50	Creek Mile 0.9		Without	0.15	0.07	0.15 0.07 0.78 1.47 0.16 0.14	1.47	0.16	0.14	2.77
	Indian Creek	1/18/80	Wich	0.14	0.08	0.14 0.08 1.27 2.41 0.17 0.24	2.41	0.17	0.24	4.31
2-140	at Centerline Road		Without	0.12	0.10	0.12 0.10 0.92 1.83 0.19 0.19	1.83	0.19	0.19	3,35
C N3	Hintsville	1/18/80	With	0.14	0.08	0.14 0.08 1.03 1.84 0.16 0.24	1.84	0.16	0.24	3.49
0.40	Spring Branch at Dodd Road		Without	0.11	0.08	0.11 0.08 0.84	1.58	1.58 0.14 0.19	0.19	2.94
÷ 7,7	Huntsville	1/18/80	With	°0°0°	<0.06	<0.06 <0.06 0.06 0.18 <0.02 <0.02	0.18	<0.02	<0.02	0.24
* LUO	Spring Branch at Patton Road		Without	°0°0°	<0.05	<0.06 <0.06 0.09 0.14 <0.02 <0.02	0.14	<0.02	<0.02	0.23

\*All analyses performed by SLI.

Table 16. Blind Split Sediment Data

TVA	Type +	) TOO	(8/8n)	,	ng/8)	) agg	(8/8n)	Total	al DDTR (µg/g)	3/8)
[ <b>AB</b> 10	sample	0,P'	0,P' P,P'	0,P'	P, P	0,P'	P, P'	Min	Avg	Мах
3-006	BLI	<0.010	<0.020	0.020	0.030	<0.050	0.030	0.080	0.125	0.170
	ORI	<0.020	<0.020	0.020	0.030	<0.050	0.030	0.080	0.125	0.170
3-034	BLI	<0.010	<0.020	<0.020	0.020	<0.050	0.030	0.050	0.050	0.160
	ORI	<0.020	<0.020	<0.020	0.020	<0.050	0.030	0.050	0.110	0.160
4-005	BLI	<0.010	<0.020	0.030	0.030	<0.050	0.020	0.080	0.120	0.160
	ORI	<0.020	<0.020	0.040	0.050	<0.050	0.020	0.110	0.155	0.200
4-021	BLI	0.14	2.58	1.77	3.85	1.87	2.70	12.9	12.9	12.9
	ORI	0.160	2.65	1.95	4.42	2.08	3.07	14.3	14.3	14.3
4-025	BLI	<0.020	0.15	0.050	0.130	0.230	0.230	0.790	0.800	0.810
	ORI	<0.020	0.11	0.050	0.120	0.230	0.210	0.720	0.730	0.740
4-038	BLI	2.27	62.3	9.27	37.1	7.72	10.8	129	129	129
	ORI	2.73	63.0	11.5	36.5	7.81	10.4	132	132	132
4-053	BLI	3.640	80.0	27.4	48.6	5.51	14.2	179	179	179
	ORI	3.94	85.0	27.3	50.6	5.56	14.2	187	187	187
4-075	BLI	70.0	743.	55.6	65.2	10.3	42.7	786	987	987
	ORI	8.99	796.	54.5	65.2	10.1	42.7	1040	1040	1040
4-082	BLI	0.040	0.830	0.590	0.940	0.630	1.59	4.62	4.62	4.62
	ORI	0,040	0.820	0.600	0.970	0.620	1.54	4.59	4.59	4.59
060-7	BLI	<0. )20	0.030	0.070	0.080	0.030	0.050	0.260	0.270	0.280
	ORI	<0.020	0.040	0.070	0.080	0.030	0.050	0.270	0.280	0.290
4-097	BLI	0.040	0.210	0.040	0.050	<0.010	0.020	0.360	0.365	0.370
	ORI	0.040	0.210	0.040	0.050	<0.010	0.020	0.360	0.365	0.370
4-100	BLI	0.030	0.310	0.020	0.050	0.050	0.050	0.510	0.510	0.510
	ORI	0.020	0.110	0.020	9.040	0.010	0.050	0.250	0.250	0.250
4-109	BLI	0.060	0.150	0.050	0.080	0.050	0.200	0.590	0.590	0.590
	ORI	090.0	0.180	0.040	0.080	0.060	0.000	0.510	0.510	0.510
4-114	BLI	45.3	238	203	830	35.3	70.7	1420	1420	1420
	ORI	46.7	248	214	750	36.0	75.1	1370	1370	1370
4-118D	BLI	15.4	122	3.50	7.00	2.20	00.9	156	156	156
	ORI	17.6	135	3.81	7.80	2.32	7.48	174	174	174
4-126	BLI	1040	10100	157	463	115	405	12300	12300	12300
	ORI	1163	10200	147	458	114	448	12600	12600	12600

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Table 16 (continued)

TVA LAB ID	Type *	DDT (	(µg/g) P,P'	0, P.	(µg/g) P,P'	DDE (	(ug/g) P,P'	Total Min	DDTR	(µg/g) Max
181-7	RIT	232	156/	٥/ ع	108		716	0766	0266	0266
	100	279	2050	106	113	6.04	217	0880	2880	2880
4-156	RI.I	0.020	0.100	<0.050	0.050	070 O>	0.055	0.225	0 270	0 315
	ORI	<0.070	0.100	<0.050	0.053	<0.040	<0.040	0,153	0.253	0.353
4-160	BLI	0.022	0.160	0.039	0.130	0.022	0.034	0.407	0.470	0.470
	ORI	<0.02	0.170	0.043	0,140	0.021	0.036	0.410	0.420	0.430
4-183	BLI	0.033	1.59	0.370	1.06	0.140	0.270	3.46	3,46	3.46
	ORI	0.029	1.61	0.320	0.910	0.110	0.220	3.20	3.20	3.20
4-196	BLI	0.019	0.033	0.070	0.061	0.033	0.093	0.309	0.309	0.309
	ORI	<0.05	<0.038	0.076	0.052	0.048	0.095	0.271	0.271	0.271
4-200	BLI	103	780	45.0	43.7	22.9	91.6	1090	1090	1090
	ORI	105	860	46.2	39.9	23.1	90.3	1160	1160	1160
4-213	BLI	0.015	0.16	0.024	0.082	0.009	0.027	0.317	0.317	0.317
	ORI	<0.017	0.17	0.022	0.09	0.007	0.023	0.312	0.320	0.329
4-222	BLI	3.67	20.3	8.00	8.00	3,39	6.68	50.0	50.0	50.0
	ORI	4.76	36.7	12.2	12.2	4.08	15.6	85.5	85.5	85.5
4-234	BLI	30.4	114	11.8	21.9	9.00	17.3	201	201	201
	ORI	19.7	97.8	10.7	18.8	3.57	16.0	167	167	167
4-240	BLI	1.15	3.06	<0.57	0.83	<0.44	0.76	5.80	6.30	6.81
	ORI	1.17	2.57	<0.52	1.03	0.39	0.70	5.86	6.12	6.38
5-165	BLI	<0.00>	0.020	<0.00>	0.008	<0.003	0.020	0.048	0.056	0.063
	ORI	<0.00>	0.020	<0.00>	0.008	<0.003	0.020	0.048	0.056	0.063
6-475	BLI	2.73	57.1	14.4	33.3	5.8	17.5	132	132	132
	ORI	4.84	53.8	11.3	34.8	5.55	14.4	125	125	125

\* BLI - Blind sample. ORI - Regular original sample.

Barrier State Stat

Table 17. Blind Split Sediment Data (by Request)

TVA	Type		(µg/g)		μg/g)		μg/g)			μg/g)
LAB ID	sample	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	Min	Avg	Max
/ 19/	nn.	-0.013	0.25	0.098	0.21	0.065	0.090	0.713	0.718	0.726
4-184	RR	<0.013	0.25							
4-41	ov	<0.02	0.53	0.19	0.41	0.12	0.11	1.36	1.37	1.38
4-157	RR	<0.09	0.30	<0.06	0.081	<0.05	0.53	0.434	0.534	0.634
4-47	ov	<0.02	0.14	<0.02	0.10	<0.01	0.01	0.25	0.28	0.30
4-161	RR	0.010	0.19	0.051	0.12	0.030	0.077	0.478	0.478	0.478
4-63	OV	<0.02	0.57	0.11	0.45	0.04	0.08	1.25	1.26	1.27
4-174	RR	0.28	3.10	0.30	0.89	<0.20	0.52	5.09	5.19	5.29
4-55	OV	0.07	2.21	0.89	1.97	0.24	0.44	5.82	5.82	5.82
4-180	RR	0.13	3.00	0.48	0.85	0.13	0.30	4.89	4.89	4.89
4-59	ov	0.20	3.00	1.56	2.18	0.29	0.68	7.91	7.91	7.91
4-219	RR	1550	8630	369	1050	44.5	226	11900	11900	11900
4-96	ov	0.50	38.4	2.9	3.3	0.38	1.9	54.4	54.4	54.4
4-210	RR	0.29	1.82	1.56	3.84	0.82	1.56	9.89	9.89	9.89
4-71	ov	0.03	0.54	0.39	0.94	0.19	0.35	2.44	2.44	2.44

<sup>\*</sup>RR - Reanalyzed value obtained by SLI.
OV - Original value obtained by SLI.

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Table 18. Tabulation of Results from "Pooled" Sediment Samples for DDTR Analysis

TVA	- Pa - Pa - Pa - Pa - Pa - Pa - Pa - Pa	υ) ΙΟΟ 1, ΤΟΟ	(18/8)	υσυ (με/g)	. d d (8/8n	DDE (1	,d'd (8/8n)	Total DDTR (min)
SD-11*	$S\Gamma I$	0.20	5.06	3,53	8.49	2.43	2.66	25.6
SD-12*	SLI	0.09	5.21	3,77	8.53	2.44	5.87	25.9
SD-13*	SLI	0.15	5.16	3.82	8.20	2.36	5.61	25.3
SD-14*	SLI	0.56	5.37	4.25	8.95	2.46	6.27	27.9
SD-15*	SLI	0.13	5.20	3.80	6.85	2.21	5.20	23.4
SD-6*	EPA	<0.85	4.50	7.60	9.30	3,30	6.10	28.4
SD-7*	EPA	<0.85	4.10	4.10	14.00	3.00	7.90	33.1
SD-8*	EPA	<0.79	4.13	4.10	9.10	3.00	8.30	28.6
×6-0S	EPA	<0.82	4.40	09.4	9.90	3.40	9.80	32.1
SD-10*	EPA	69.0>	3.50	4.10	10.00	1.90	5.80	25.3
SD-23	SLI	<0.2	2.57	2.63	5.06	2.23	6.01	18.5
SD-24	SLI	0.19	3.05	3.14	5.06	2.24	6.05	19.7
SD-25	SLI	0,37	5.47	5.11	9.76	3.32	7.95	32.0
SD-26	SLI	0.16	2.85	3,28	5.89	2.88	7.12	22.2
SD-27	EPA	<1.5	3.8	4.6	11.0	3.5	6.7	29.0
SD-28	EPA	<0 <b>.</b> 6	7.0	4.2	6.6	3.3	5.9	27.0
E-7	SLI	0.23	70.7	3,35	5.71	2.77	6.17	22.3
E-8	SLI	0.19	3.52	3.19	5.38	2.72	5.96	21.0

\*
Submitted initially to establish concentration of "pooled" sample.

Tabulation of Results from "Pooled" Sediment Samples for Trace Metals and Particle Size Table 19.

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			K	Replicate number <sup>a</sup>	mber <sup>a</sup>					,
Constituent (units)	-	2	3	4	5	9	7	Mean	S.D.b	RSDC
Iron, µg/g	33,000	31,000	27,000	26,000	23,000	ı	1	28,000	4,000	14.3
Manganese, ug/g	2,400	2,200	2,300	2,100	1,500	•	ı	2,100	353	16.8
Copper, ug/g	61	55	62	9	26	1	•	58.8	3.1	5.3
Zinc, ug/g	370	330	410	400	340	1	•	370	35.3	9.5
Nickel, ug/g	30	32	39	38	35	1	1	34.8	3.8	10.9
Silver, ng/g	7	7	9	7	9	•	1	9.9	0.54	8.1
Cadmitim, ug/g	7	7	7	က	7	ı	1	2.2	0.44	20.0
Lead, ug/g	69	63	74	29	70	ı	ı	68.6	4.0	5.8
Chromium, ng/g	82	73	77,	85	70	•	1	77.4	6.1	7.9
Cobalt, ug/g	10	6	^5ª	σ,	7	ı	1	œ	7	25.0
Aluminum, µg/g	52,000	62,000	72,000	65,000	29,000	ı	ı	62,000	7,380	11.9
Barium, µg/g	170	200	210	180	190	1	ı	190	15.8	8.3
Beryllium, µg/g	<b>!</b> >	7	7>	7	7	•	ı	ı	ı	•
Thallium, µg/g	\$	\$	\$	\$	\$	1	1	•	1	ι
Mercury, µg/g	0.52	0.45	0.68	0.67	0.55	ı	ı	0.57	0.09	15.8
Arsenic, µg/g	11	10	12	01	11	ı	1	10.8	0.83	7.7
Selenium, µg/g	<0°8	<0°8	<0.8	<0.8	<0°8	ı	•	i	•	1
% Moisture	60.93	61.52	60.59	59.87	59.86	59.89	58.56	60.17	0.95	1.6
% Vol. Solids	8.98	9.03	11.79	8.99	60.6	9.08	9.20	9.45	1.0	10.6
% Solids Finer Than										
2.0 mm	100	100	100	99.87	100	99.75	99.87	99.92	0.09	0.09
0.5 mm	99.87	99.74	99.74	99.74	99.87	99.62	97.74	99.47	0.76	0.76
0.125 mm	98.45	98.33	98.21	98.20	98.35	98.10	98.10	98.26	0.11	0.11
0.063 mm	97.42	97.56	97.19	97.31	97.60	97.34	97.41	97.40	0.14	0.14
% Solids in <63µ Fraction (From	ction (Fr	om Sedigraph	aph)							
0.010 mm	87	87	06	88	98	87	98	87.4	1.5	1.7
0.002 III	61	29	62	61	59	29	61	60.2	1.2	2.0
1.000.0	43	40	44	44	14	04	4.3	47.1	1.,	4.0

All analyses performed by Laboratory Branch (TVA).

SD - Standard deviation.

CRSD -Relative standard deviation.

Less than value used in calculations.

Table 20. SLI-EPA Split Sediment Data

TVA	rak	DDT (µg/g) O,P' P,P'	DDD (µg/g) O,P' P,P'	DDE (μg/g) O,P' P,P'	Total Min	DDTR (µg/g)
LAB ID	Lab	0,P' P,P'	U,P P,P	0,P' P,P'	MIII	Avg Max
3-001	EPA	<0.020 <0.020	<0.014 <0.014	<0.011 0.017	0.017	0.056 0.096
3 001	SLI	<0.020 <0.020	<0.020 0.020	<0.050 0.010	0.030	0.085 0.140
3-003	EPA	<0.110 <0.110	<0.084 <0.038	<0.073 0.051	0.051	0.258 0.466
5 005	SLI	0.030 0.030	0.030 0.050	<0.050 0.030	0.170	0.195 0.220
3-005	EPA	<0.059 <0.059	<0.060 <0.024	<0.055 0.042	0.042	0.170 0.299
	SLI	<0.020 <0.020	0.020 0.030	<0.050 0.030	0.080	0.125 0.170
3-006	EPA	<0.025 <0.030	0.023 0.042	0.026 0.039	0.130	0.157 0.185
	SLI	<0.020 <0.020	0.020 0.030	<0.050 0.030	0.080	0.125 0.170
3M-07	EPA	<0.013 <0.013	<0.006 <0.006	<0.003 0.003	0.000	0.022 0.044
	SLI	<0.020 <0.020	<0.020 <0.020	<0.010 0.010	0.000	0.050 0.100
4-001	EPA	<0.061 <0.061	0.340 0.420	0.140 0.150	1.05	1.11 1.17
	SLI	<0.020 0.030	0.170 0.450	0.110 0.140	0.900	0.910 0.920
4-002	EPA	<0.180 1.10	1.70 3.80	2.00 2.60	11.2	11.3 11.4
	SLI	0.040 2.20	3.40 3.10	2.00 3.00	13.7	13.7 13.7
4-003	EPA	<0.098 0.690	0.620 1.40	1.80 1.50	6.01	6.06 6.11
	SLI	0.030 0.550	0.620 0.980	1.80 1.20	5.18	5.18 5.18
4-004	EPA	<0.070 0.130	0.350 0.650	0.630 0.490	2.25	2.28 2.32
	SLI	0.040 0.170	0.280 0.720	0.600 0.570	2.38	2.38 2.38
4-006	EΡΛ	<0.070 0.450	0.900 0.400	0.400 1.10	3.25	3.28 3.32
	SLI	0.030 0.220	1.20 0.730	0.550 1.40	4.13	4.13 4.13
4-032	EPA	<0.110 1.30	0.740 2.30	0.900 0.010	5.85	5.90 5.90
	SLI	0.100 3.05	1.22 3.68	1.08 1.11	10.2	10.2 10.2
4-033	EPA	<0.040 0.120	0.056 0.160	0.049 0.044	0.429	0.449 0.469
	SLI	<0.020 0.170	0.100 0.220	0.070 0.060	0.620	0.630 0.640
4-034	EPA	<0.068 1.00	0.350 1.10	0.500 0.270	3.22	3.25 3.29
	SLI	0.110 2.35	0.510 1.11	0.440 0.430	4.95	4.95 4.95
4-038	EPA	<2.00 48.0	8.20 34.0	6.80 6.10	103	104 105
	SLI	2.73 63.0	11.5 36.5	7.81 10.4	132	132 132
4-039	EPA	<1.90 42.0	11.0 36.0	12.0 8.10	109	110 111
	SLI	0.680 34.4	10.3 34.4	10.3 9.75	99.8	99.8 99.8
4-040	EPA	<0.069 0.460	0.360 0.650	0.640 0.350	2.46	2.52 2.59
	SLI	0.020 0.810	0.480 1.100	0.660 0.570	3.64	3.640 3.64
4-041	EΡΛ	<0.030 0.440	0.190 0.340	0.120 0.110	1.20	1.22 1.23
	SLI	<0.020 0.530	0.190 0.410	0.120 0.110	1.36	1.37 1.38
4-044	EPA	<2.00 46.0	7.20 36.0	4.80 5.40	99.4	100 101
/ 0/5	SLI	1.14 52.5	11.0 35.0	6.50 9.00 0.120 0.120	115 0.940	115 115 0.981 1.02
4-045	EPA	<0.830 0.220 0.02 1.28	0.160 0.320 0.660 1.20	0.120 0.120 0.380 0.480	4.02	4.02 4.02
4 170	SLI				8.42	8.42 8.42
4-170	EPA	0.190 1.20 <0.130 1.68	2.50 1.20 3.28 1.45	0.630 2.50 0.850 3.13	10.4	10.6 10.5
4-171	SLI EPA	<pre>&lt;0.130 1.68 0.350 0.750</pre>		1.80 3.50	11.3	11.3 11.3
4-1/1	SLI	<0.410 0.910	2.94 1.74	1.24 4.26	11.1	11.3 11.5
4-172	EPA	9.20 190	71.0 142	27.0 32.0	471	471 471
4-1/2	SLI	7.00 78.8	56.3 68.8	17.3 38.8	267	267 267
4-176	EPA	0.014 0.170		0.013 0.021	0.309	0.309 0.309
4-110	SLI	<0.530 6.38	2.58 5.88	1.05 2.80	18.7	19.2 19.2
	SLI	0.550 0.50	2.50 5.00	1.05 2.00	1047	3712 2715

Table 20 (continued)

TVA LAB ID	Lab	DDT (	μg/g) P,P'		g/g) P,P'		g/g) P,P'	Total Min	DDTR (;	ig/g) Max
4-194	EPA	<0.800	3.20	4.50	8.00	2.80	4.80	23.3	23.7	24.1
	SLI	0.340	4.36	3.61	6.21	2.01	5.03	21.6	21.6	21.6
4-195	EPA	2.40	7.90	4.40	5.70	2.70	3.30	26.4	26.4	26.4
	SLI	0.046	0.350	1.44	1.38	0.830	1.50	5.55	5.55	5.55
4-212	EPA	0.140	0.660	0.088	0.120	0.040	0.110	1.16	1.16	1.16
	SLI	0.066	0.350	0.052	0.100	0.028	0.110	0.706	0.706	0.706
4-215	EPA	<0.030	<0.040	0.140	0.160	0.054	0.110	0.464	0.499	0.534
	SLI	0.008	0.008	0.056	0.048	0.034	0.090	0.244	0.244	0.244
4-220	EPA	480	1500	440	520	110	240	3290	3290	3290
	SLI	740	6100	640	850	148	435	8910	8910	8910
4-221	EPA	1400	3300	620	740	160	320	6540	6540	6540
	SLI	2300	12,700	1000	1300	150	650	18,100	18,100	18,100
4-223	EPA	<5.00	18.0	48.0	46.0	11.0	24.0	147	150	152
	SLI	1.56	12.2	22.6	21.1	7.02	20.8	85.3	85.3	85.3
4-228	EPA	<350	2400	770	1300	230	410	5110	5460	5460
	SLI	170	3100	<b>960</b>	2400	275	800	7700	7700	7700
4-236	EPA	220	1100	170	270	77.0	130	1970	1970	1970
	SLI	184	1050	127	260	835	130	2590	2590	2590

Table 21. Results from Special Study to Determine Sediment Compositing Variability

.1

							Total
Replicate	DDT (ug.	ug/g) p p'	000	ιD (μg/g) σ σ σ	DDE	DDE (ug/g)	DOTR
	-17	-28-	ł		310	161	/A/R/
1	17.4	130	4.20	8.41	2.19	7.40	170
2	13.8	170	5.29	8.70	3,10	6.31	207
٣	16.0	106	4.40	8.41	2.19	7,10	144
4	25.1	154	67.7	9.41	2.20	5.89	201
Ś	17.6	135	3.81	7.80	2.32	7.48	174
9	20.5	135	07.4	8.40	2.88	9.71	181
7	18.7	220	4.19	9.80	2.39	8.28	263
œ	15.0	89.7	3.81	7.61	2.00	6.61	125
Mean	18.0	142	4.32	8.57	2.40	7,35	183
S.D.	3.55	40.1	0.47	0.74	0,38	1.21	42.2
RSD (%)	19.7	28.3	10.8	8.6	15.9	16.5	23.0

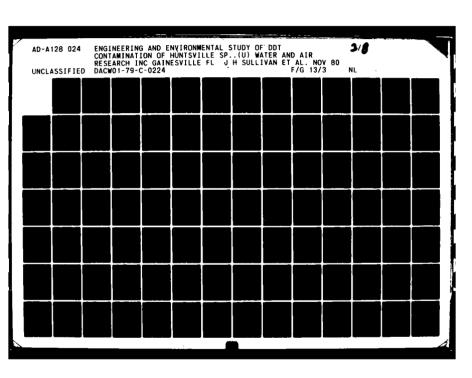
all analyses performed by SLI. bStandard deviation. Relative standard deviation.

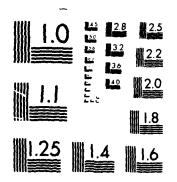
Table 22. Original SLI Blind Split Fish Data

			-			T OFTE T	all Data			
TVA	Type	H	(8/8n)	ח) מממ	(ng/g)	DDE (	(µg/g)	Tota]	Total DDTR (µg/g)	(8)
LAB ID	sample*	0,P'	P, P'	0,P'	P, P'	0,P'	P, P	Min	Avg	Max
1-008	BLI	0.020	0.030	<0.030	0.150	0.040	0.150	0.390	0.405	0.420
	ORI	0.050	0.040	0.030	0.280	0.070	0.290	0.760	0.760	0.760
1-012	BLI	<0.020	<0.200	<0.020	<0.020	0.310	0.070	0.380	0.420	0.460
	ORI	<0.020	<0.020	<0.020	<0.020	<0.010	0.020	0.020	0.065	0.110
1-017B	BLI	<0.020	<0.020	<0.020	0.230	0.057	0.280	0.567	0.597	0.627
	ORI	0.034	0.032	0.024	0.290	0.067	0.300	0.747	0.747	0.747
1-031A	BLI	<0.020	<0.020	0.042	0.160	0.076	0.160	0.438	0.458	0.478
	ORI	<0.020	<0.020	<0.020	<0.020	<0.010	0.020	0.020	0.065	0.110
1-052C	BLI	0.057	0.036	<0.020	0.048	0.064	0.067	0.272	0.282	0.292
	ORI	0.220	0.170	<0.010	0.140	0.340	0.410	1.28	1.28	1.29
1-056D	BLI	0.130	0.300	0.100	0.340	0.140	0.280	1.29	1.29	1.29
	ORI	0.070	0.160	090.0	0.100	0.100	0.190	0.680	0.680	0.680
1-067	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.080	0.080	0.145	0.210
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.060	090.0	0.125	0.190
1-070	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	000.0	0.075	0.150
	0 <b>R.I</b>	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	000.0	0.075	0.150
1-078	BLI	<0.030	0.010	0.380	0.810	0.089	0.540	1.92	1.93	1.95
	ORI	<0.030	0.092	0.290	0.00	0.099	0.450	1.83	1.85	1.86
1-080D	BLI	0.024	0.051	0.093	0.780	0.400	0.610	1.96	1.96	1.96
	ORI	0.042	0.030	0.084	0.086	0.380	0.640	2.04	2.04	2.04
1-086F	BLI	<0.020	0.290	1.86	11.9	1.48	7.61	23.1	23.2	23.2
	ORI	0.240	0.330	2.150	9.11	1.14	5.83	18.8	18.8	18.8
1-089D	BLI	1.48	0.340	20.1	52.9	9.10	32.9	117	117	117
	ORI	2.61	0.180	38.8	101	17.2	58.0	218	218	218
1-095	BLI	<0.030	0.051	<0.030	0.220	0.150	0.380	0.801	0.831	0.861
	ORI	<0.030	990.0	<0.030	0.130	0.039	0.110	0.345	0.375	0.405
1-103A	BLI	0.290	0.300	2.08	5.85	1.23	4.24	14.0	14.0	14.0
	ORI	0.066	0.095	1.31	3.19	0.750	2.43	7.84	7.84	7.84
1-107E	BLI	<0.020	0.043	0.020	0.089	0.037	0.340	0.529	0.539	0.549
	ORI	0.028	0.045	0.036	0.280	0.057	00,400	0.846	0.846	0.846

Table 22 (continued)

TVA	Type.	) Taa	(ng/g)	) aaa	u8/8)	DDE (	(8/gn)	Total	DDTR	(ng/g)
LAB 10	Sample	0, P'	P, P'	0, P*	P, P'	0,P'	P,P'	Min	Avg	Max
1-116	BLI	<0.030	<0.030	<0.030	0.190	<0.020	0.140	0.330	0.385	0,440
	ORI	0.077	0.051	0.120	0.400	0.130	0.350	1.13	1.13	1.13
1-1240	BLI	0.022	0.029	0.140	0.330	0.110	0.330	0.961	0.961	0.961
	ORI	0.038	0.026	0.023	0.230	0.072	0.220	609.0	0.609	0.609
1-132E	BLI	<0.020	<0.020	<0.020	0.041	<0.010	0.050	0.091	0.126	0.161
	ORI	<0.020	<0.020	<0.020	<0.020	<0.010	0.010	0.010	0.055	0.100
1-163D	BLI	0.067	0.095	0.970	2.79	0.580	1.93	6.43	6.43	6.43
	ORI	0.390	0.170	2.03	5.61	1.25	4.09	13.5	13.5	13.5
1-166B	BLI	0.075	0.047	0.440	1,11	0.410	1.06	3.14	3.14	3.14
	ORI	0.043	0.061	0.370	1.02	0.380	0.930	2.80	2.80	2.80
1M-51	BLI	0.530	0.410	6.10	28.3	3,42	11.5	50.3	50.3	50.3
	ORI	0.076	0.030	0.970	4.05	0.520	1.61	7.26	7.26	7.26
2M-01	BRI	0.090	<0.020	<0.030	<0.020	<0.020	0.240	0.330	0.372	0.420
	ORI	0.063	<0.020	<0.020	0.180	0.035	0.140	0.418	0.438	0.458
2M-15	BRI	1.02	0.810	16.3	63.6	5.46	18.0	105	105	105
	ORI	0.190	0.130	3.40	11.6	1.15	3.37	19.8	19.8	19.8
1-001F**	BLI	<0.100	<0.100	<0.100	0.170	<0.100	0.150	0.320	0.520	0.720
	ORI	<0.100	<0.100	<0.090	0.180	<0.060	0.160	0.340	0.515	0.690
1-018**	BLI	0.051	0.078	0.033	0.270	0.120	0.430	0.982	0.982	0.982
	ORI	0.057	0.072	0.098	0.220	0.120	0.340	0.907	0.907	0.907
1-026**	BLI	0.050	<0.030	0.020	0.090	090.0	0.110	0.330	0.345	0.360
	ORI	0.030	<0.030	0.030	0.100	0.030	0.110	0.300	0.315	0.330
1-035**	BLI	<0.030	<0.030	0.047	0.25	0.062	0.21	0.569	0.599	0.629
	ORI	<0.030	<0.030	<0.030	0.15	0.037	0.14	0.327	0.372	0.417
1-050**	BLI	0.055	0.063	0.110	0.450	0.130	0.420	1.228	1.228	1.228
	ORI	<0.030	0.080	0.160	0.520	0.150	0,440	1.35	1.36	1.38
1-051**	BLI	<0.030	0.041	0.103	0.15	0.084	0.18	0.558	0.573	0.588
	ORI	<0.030	0.058	0.099	0.11	0.061	0.24	0.568	0.583	0.598
1-054**	BLI	0.410	0.170	0.090	0.310	0.100	0.370	1.360	1.405	1.450
	ORI	0.370	0.300	0.130	0.450	0.250	0.510	2.010	2.010	2.010
1-081**	BLI	<∩.030	<0.030	<0.030	<0.020	<0.020	0.180	0.180	0.245	0.310
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.120	0.120	0.185	0.250





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS 1963-A

Table 22 (continued)

TVA	Tvne	) Tuu	118/8)	) עמט	10/0)		(0/8/1)	Total	חחת	(0)
LAB ID	Sample		, re, e, P, P	0,P'	, He, 6, P, P	0,P'	79,64 P.P.	Min	Avg	Max
		l								
1-116	BLI	<0.030	<0.030	<0.030	0.190	<0.020	0.140	0.330	0.385	0.440
	ORI	0.077	0.051	0.120	0.400	0.130	0.350	1.13	1.13	1.13
1-124D	BLI	0.022	0.029	0.140	0.330	0.110	0.330	0.961	0.961	0.961
	ORI	0.038	0.026	0.023	0.230	0.072	0.220	0.609	0.609	0.609
1-132E	BLI	<0.020	<0.020	<0.020	0.041	<0.010	0.050	0.091	0.126	0.161
	ORI	<0.020	<0.020	<0.020	<0.020	<0.010	0.010	0.010	0.055	0.100
1-163D	BLI	0.067	0.095	0.970	2.79	0.580	1.93	6.43	6.43	6.43
	ORI	0.390	0.170	2.03	5.61	1.25	4.09	13.5	13.5	13.5
1-166B	BLI	0.075	0.047	0.440	1.11	0.410	1.06	3.14	3.14	3.14
	ORI	0.043	0.061	0.370	1.02	0.380	0.930	2.80	2.80	2.80
1M-51	BLI	0.530	0.410	6.10	28.3	3.42	11.5	50.3	50.3	50.3
	ORI	0.076	0.030	0.970	4.05	0.520	1.61	7.26	7.26	7.26
2M-01	BRI	0.000	<0.020	<0.030	<0.020	<0.020	0.240	0.330	0.372	0.420
	ORI	0.063	<0.020	<0.020	0.180	0.035	0.140	0.418	0.438	0.458
2M-15	BRI	1.02	0.810	16.3	63.6	5.46	18.0	105	105	105
	ORI	0.190	0.130	3.40	11.6	1.15	3.37	19.8	19.8	19.8
1-001F**	BLI	<0.100	<0.100	<0.100	0.170	<0.100	0.150	0.320	0.520	0.720
	ORI	<0.100	<0.100	<0.090	0.180	<0.060	0.160	0.340	0.515	0.690
1-018**	BLI	0.051	0.078	0.033	0.270	0.120	0.430	0.982	0.982	0.982
	ORI	0.057	0.072	0.098	0.220	0.120	0.340	0.907	0.907	0.907
1-026**	BLI	0.050	<0.030	0.020	0.090	090.0	0.110	0.330	0.345	0.360
	ORI	0.030	<0.030	0.030	0.100	0.030	0.110	0.300	0.315	0.330
1-035**	BLI	<0.030	<0.030	0.047	0.25	0.062	0.21	0.569	0.599	0.629
	ORI	<0.030	<0.030	<0.030	0.15	0.037	0.14	0.327	0.372	0.417
1-050**	BLI	0.055	0.063	0.110	0.450	0.130	0.420	1.228	1.228	1.228
	ORI	<0.030	0.080	0.160	0.520	0.150	0.440	1.35	1.36	1.38
1-051**	BLI	<0.030	0.041	0.103	0.15	0.084	0.18	0.558	0.573	0.588
	ORI	<0.030	0.058	0.099	0.11	0.061	0.24	0.568	0.583	0.598
1-054**	BLI	0.410	0.170	0.090	0.310	0.100	0.370	1.360	1.405	1.450
	ORI	0.370	0.300	0.130	0.450	0.250	0.510	2.010	2.010	2.010
1-081**	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.180	0.180	0.245	0.310
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.120	0.120	0.185	0.250

Table 22 (continued)

**(**)

TVA	Type	η) TQQ	(8/8)	ח) מממ	(8/8)	DDE (	ug/g)	Total		(8)
LAB ID	sample	0,P'	P, P'	0,P'	P, P'		P, P1	Min	Avg	Мах
1-112**	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	00000	0.075	0.150
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	0000	0.075	0.150
1-138**	BLI	<0.03	0.03	0.41	0.81	0.12	0.39	1.76	1.78	1.79
	ORI	<0.03	0.14	0.51	0.95	0.15	0.56	2.31	2.32	2.34
1-154**	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.180	0.180	0.245	0.310
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.130	0.130	0.195	0.260
IM-07**	BLI	0.83	1.24	6.05	16.0	2.82	13.5	40.4	40.4	40.4
	ORI	1.00	1.07	5.63	16.9	3.26	14.2	42.1	42.1	42.1
1M-17**	BLI	5.85	11.2	35.5	73.7	10.5	34.9	172	172	172
	ORI	4.50	5.12	19.3	37.3	5.16	18.8	90.2	90.2	90.2
1M-23**	BLI	0.440	0.230	<0.020	0.280	0.260	0.600	1.81	1.82	1.83
	ORI	0.430	0.260	<0.040	0.260	0.370	0.810	2.13	2.15	2.17
1M-37**	BLI	3,48	5.67	29.9	91.8	14.8	44.5	190	190	190
	ORI	13.7	18.0	90.2	291	47.2	141	601	601	601
1M-52**	BLI	0.110	<0.500	2.10	5.91	0.950	1.92	11.0	11.0	11.0
	ORI	0.260	960.0	4.61	11.3	1.89	4.03	22.2	22.2	22.2
1-165**	BLI	<0.03	<0.03	0.15	0.58	0.18	0.40	1,31	1.34	1.37
	ORI	<0.03	<0.03	<0.03	0.25	<0.02	0.18	0.43	0.48	0.54

\* BII - Blind sample. ORl - Regular original sample.

\*\*Bad day data.

Table 23. Results of Low Concentration of "Pooled" Fish Sample Analyzed by SLI

TVA LAB ID	SLI project No.	Date prepared by SLI	% Lipids	DDT (	(µg/g) P,P'	DDD (0, P'	(µg/g) P,P'	DDE (	(µ8/8) P,P	Total DDTR (mininum) (ug/g)
1-A*	9733	09/25/79	3.95	0.28	0.19	0.18		0.25		2.46
1-8*	9733	09/25/79	4.62	0.33	0.23	0.22	1.01	0.30	0.00	2.99
1-C*	9733	09/25/79	5.03	0.33	0.22	0.22	1.11	0.30	0.97	3.15
1-0*	9733	09/25/79	4.90	0.32	0.23	0.22	1.07	0.31	0.92	3.07
1-E*	9733	09/25/79	5.12	0.31	0.21	0.22	1.03	0.30	0.94	3.06
1-F	10021	11/29/79	5.83	0.30	0.12	0.24	1.26	0.41	1.27	3.60
1-c	10021	11/29/79	4.96	0.25	0.23	0.34	1.01	0.30	0.00	3.03
1-H	10021	11/29/79	2.15	0.17	0.15	0.18	0.89	0.61	1.06	3.06
1 <b>-</b> 1	10054	12/04/79	2.48	0.16	0.27	0.43	0.88	0.30	1.38	3.42
1-1	10054	12/04/79	4.68	0.17	0.20	0.40	1.31	0.34	1.10	3.52
1-K	10054	12/04/79	2.57	0.15	0.11	0.42	1.42	0.38	1.50	3.98
1-r	10067	12/5-6/79	1.17	<0.03	0.035	<0.03	0.18	0.046	0.16	0.42
1-X	10067	12/5-6/79	3.63	1.04	<0.04	0.12	0.53	0.24	0.57	2.50
1-N	10067	12/5-6/79	0.58	<0.04	<0°0>	<0.04	0.093	<0.04	0.083	0.18
1-0	10102	12/07/79	1.30	<0.02	<0.02	<0.02	0.22	0.062	0.21	0.49
1-R	10102	12/07/79	0.27	<0.02	<0.02	<0.02	0.042	<0.01	<0.01	0.04
1-S	10102	12/07/79	0.51	<0.02	<0.02	<0.02	0.060	<0.01	0.064	0.12
1-T	10133	12/13/79	1.97	0.095	0.047	0.10	0.33	0.12	0.35	1.04
1-n	10133	12/13/79	2.13	0.087	0.060	0.12	0.37	0.13	0.39	1.16
1-V	10133	12/13/79	1.73	0.085	0.060	0.12	0.28	0.11	0.34	1.00
1-W	10173	12/27-28/79	5.66	0.19	0.045	0.34	0.94	0.36	0.98	2.86
1-X	10173	12/27-28/79	5.34	0.016	0.080	0.37	1.05	0.37	1.00	3.03
1-Y	10173	12/27-28/79	5.87	0.27	0.18	0.32	1.09	0.38	1.15	3.39

\* Replicates from the blended mass of fish submitted initially.

Table 24. Results of Low Concentration "Pooled" Fish Sample Analyzed by EPA

**(**)

TVA	Date prepared	) TOO	(8/8n)	1) 000	(8/8n)	DDE (µg/g)	(8/8)	Total DDTR (minimum)
[ <b>AB</b> 10	by EPA	0,P	P, P'	0,P'	P, P'	0,P'	P,P'	(8/8n)
1-A*	09/25/79	0.31	0.18	0.21	0.99	0.34	1.0	3.03
1-B*	09/25/79	0.34	0.17	0.22	1.0	0.35	1.1	3.18
1-C*	09/25/79	0.38	0.22	0.21	1.2	0.35	1.2	3.56
1-D*	09/25/79	0.45	0.28	0.26	1.3	0.39	1.3	3.98
1-E*	09/25/79	0.42	0.16	0.26	1.2	0.40	1.2	3.64
1-P	12/13/79	0.62	0.38	0.45	1.5	0.44	1.5	6.4
1-0	12/13/79	0.58	0.28	0.31	1.0	0.43	1:1	3.7
1-AA	12/27/79	0.15	<0.3	0.23	1.0	0.24	1.1	2.7
1-BB	12/27/79	0.0	<0.4	0.23	0.81	0.17	0.83	2.1
1-cc	12/27/79	0.32	<0.34	<0.26	1.1	0.27	1.2	3.2

\* Replicates from the blended mass of fish submitted initially.

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Table 25. Results of High Concentration of "Pooled" Fish Sample Analyzed by SLI

	SLI	Date								
TVA	project	prepared		DDT	(8/8n)	DDD	(8/8n)	DDE	(g/gn)	Total DDTR (minimum)
IAB 1D	No.	by SLI	% Lipids		P,P'	- 1	P.P'	0,P'	P,P'	(µg/g)
1-HA*	9853	10/31/79	2.03	3.44	4.48	50.8	149	20.8	81.6	310
1-HB*	9853	10/31/79	1.99	3.34	4.88	38.4	158	22.2	83.2	310
1-HC*	9853	10/31/79	1.84	3.14	4.46	36.6	142	21.2	77.0	284
1-HD*	9853	10/31/79	2.12	3.64	5.02	52.8	164	26.4	90.6	342
1-HE*	9853	10/31/79	2.15	3.68	76.7	41.0	172	24.6	92.4	339
1-HF	10021	11/29/79	0.86	13.2	1.25	13.3	42.3	7.05	26.2	103
1-HG	10021	11/29/79	0.81	3.40	1.75	13.9	33.0	7.17	22.8	82.0
1-HH	10021	11/29/79	0.22	0.46	0.51	3.27	11.2	2.30	7.04	24.8
1-HI	10054	12/04/79	0.85	2.26	2.27	17.9	59.1	8.94	35.8	126
1-HJ	10054	12/04/79	0.94	1.93	1.83	16.2	48.5	7.70	32.1	108
1-HK	10054	12/04/79	1.31	3.19	3.88	26.5	86.7	13.3	53.6	187
1-HL	10067	12/5-6/79	0.36	0.61	0.11	5.30	1.43	4.38	1.06	12.9
1-E	10067	12/5-6/79	0.08	0.11	0.10	1.06	3.25	0.54	1.80	98.9
1-HN	10067	12/5-6/79	0.36	0.55	0.48	6.85	19.6	3.59	13.3	7.47
1-HQ	10102	12/07/79	1.54	3.17	4.12	28.0	102	1.30	58.1	197
1-HR	10102	12/07/79	0.69	1.24	1.96	10.9	52.3	9.59	23.5	99.5
1-HS	10102	12/07/79	0.55	<0.02	<0.02	6.10	21.7	3.35	12.0	43.2
1-HT	10133	12/13/79	2.01	3.44	4.40	40.3	125	20.1	74.2	267
1-HU	10133	12/13/79	0.95	1.96	2.54	20.0	59.1	10.7	33.0	127
1-HV	10133	12/13/79	1.32	3.23	3.44	30.6	85.2	15.6	45.2	183
1-HV	10173	12/27/79	2.31	3.80	5.50	9.44	137	22.7	78.7	292
1-HX	10173	12/27/79	2.40	4.40	5.50	55.3	160	32.5	113	371
1-HY	10173	12/27/79	2.11	4.20	5.50	53.1	160	34.3	89.7	347

 $<sup>\</sup>star$  Replicates from the blended mass of fish submitted initially.

Table 26. Results of High Concentration of "Pooled" Fish Sample Analyzed by EPA

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TVA LAB ID	Date prepared by EPA		DDT (	DDT (μg/g) Ο,Ρ' Ρ'Ρ'	000 0,P	DDD (μg/g) Ο,Ρ' Ρ,Ρ'		DDE (μg/g) 0,P' P,P'	μ <b>g/g)</b> P,P'	Total DDTR (minimum) (µg/g)
1-HA*	10/31/79		6.1	5.9	35	160		28	92	330
1-HB*	10/31/79		5.8	5.7	31	160		54	95	320
1-HC*	10/31/79		0.9	6.1	30	160		25	94	320
1-旧*	10/31/79		7.7	7.5	70	200		31	120	410
1-HE*	10/31/79		6.9	6.8	35	180		27	110	370
1-HP	12/13/79		2.4	2.1	18	29		11	34	130
1-H0	12/13/79		4.5	3.9	31	110		19	65	230
1-HAA	12/27/79		<5.0	4.1	27	120		21	65	240
1-HBB	12/27/79		3.9	3.3	22	95		18	50	190
1-HCC	12/27/79		5.7	5.0	34	120		27	99	260

 $\star$  Replicates from the blended mass of fish submitted initially.

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Table 27. Original EPA-SLI Split Fish Data

		ner .	70 -11 01	-6-mar mm	arrdo rec	ו דפון הפרק				
TVA			18/8)	1) aga	ug/g)	DDE (1	(8/81	Tot	al DDTR (	(g/g)
LAB ID	Lab	0,P'	P,P'	0,P'	P,P'	0,P'	P, P'	Min	Avg	Max
1-017D	EPA	0.22	0.17	0.40	0.95	0.25	0.76	2.75	2.75	2.75
	SLI	0.14	0.13	0.37	0.81	0.19	99.0	2,30	2.30	2.30
1-017F	EPA	0.050	<0.20	0.12	1.80	0.34	1.4	3.71	3.81	3.91
	SLI	0.035	0.087	0.076	1.02	0.21	0.81	2.24	2.24	2.24
1-052B	EPA	0.46	<0.35	<0.10	0.31	0.087	0.44	1.30	1.52	1.75
	SLI	0.10	0.052	<0.02	0.10	0.099	0.18	0.531	0.541	0.551
1-056D	EPA	0.19	<0.30	0.21	0.48	0.12	0.36	1.36	1.51	1.66
	SLI	0.07	0.16	90.0	0.26	0.10	0.19	0.84	0.84	0.84
1-088D	EPA	<0.50	0.53	6.6	27	4.8	8.8	51.0	51.3	51.5
	SLI	0.35	0.25	10.3	20.1	4.19	8.81	44.0	44.0	44.0
1-089⊅	EPA	\$	\$	30	26	20	97	193	198	203
	SLI	2.05	0.260	29.5	77.0	13.2	45.5	168	168	168
1-130B	EPA	<0.020	<0.020	0.080	0.34	90.0	0.32	0.80	0.82	0.84
	SLI	<0.020	<0.02	0.031	0.15	0.015	0.14	0.336	0.336	0.336
1-132C	EPA	<1.0	<2.0	0.79	9.6	1.0	7.0	18.4	19.9	21.4
	SLI	0.41	0.54	0.82	6.81	0.68	5.08	14.3	14.3	14.3
1-138A	EPA	<0.08	0.12	0.30	0.68	0.14	0.24	1.48	1.52	1.56
	SLI	0.091	0.490	3.02	5.20	0.86	2.20	11.9	11.9	11.9
1-026	EPA	0.92	0.32	0.57	1.8	0.64	1.6	5.85	5.85	5.85
	SLI*	<0.03	0.03	0.03	0.10	0.03	0.11	0.30	0.32	0.33
1-086	EPA	0.29	0.22	0.80	2.8	09.0	1.8	6.51	6.51	6.51
	SLI	0.58	0.70	1.17	5.66	0.98	3,70	12.8	12.8	12.8
1-050	EPA	0.088	0.045	0.052	0.19	0.12	0.22	0,715	0.715	0.715
	*ITS	<0.03	0.080	0.16	0.52	0.15	0.44	1.35	1.36	1.38
1-113	EPA	0.31	0.36	0.30	0.75	0.37	1.2	3.29	3.29	3.29
	SLI	0.27	0.16	0.45	96.0	0.37	1.26	3.47	3.47	3.47
1-036	EPA	0.30	1.70	0.39	0.67	0.38	0.50	3.94	3.94	3.94
	*ITS	<0.02	0.035	0.077	0.20	0.077	0.21	0.599	0.609	0.619

Table 27 (continued)

TVA			ug/g)	) QQQ	ug/g)	) add	ug/g)	Tot	Total DDTR (	(ng/g)
LAB ID	Lab	0,P'	P, P'	0,P'	P, P	0,P'	P.P.	Min	8	Max
1-109	EPA		<0.0>		0.033		0.078	0.123	0.153	0.223
	SLI	<0.020	<0.020	<0.020	0.02	0.010	0.069	0.089	0.124	0.159
1-088	EPA	1.1	1.0	7.6	29	4.0	9.2	51.9	51.9	51.9
	SLI	0.20	0.13	3.00	8.44	1.20	3.28	16.2	16.2	16.2
1-053	EPA	0.040	0.042	0.027	0.099	0.053	0.26	0.521	0.521	0.521
	*ITS	0.049	0.036	0.045	0.11	0.029	0.25	0.519	0.519	0.519
1-151	EPA	<0.03	<0.0>	<0.02	0.026	0.025	0.054	0.105	0.155	0.205
	SLI*	0.10	<0.02	<0.02	<0.02	<0.01	<0.01	0.10	0.14	0.18
1-098	EPA	0.25	1.0	1.9	3.9	0.75	1.6	07.6	07.6	9.40
	SLI	<0.02	0.12	<0.02	0.190	0.063	0.43	0.803	0.823	0.843
1-078	EPA	<0.07	0.045	0.38	0.40	0.14	0.27	1.2	1.27	1.30
	SLI	<0.03	0.092	0.29	0.00	0.099	0.45	1.83	1.84	1.86
1-144	EPA	<0.03	<0.05	<0.02	0.019	<0.02	0.054	0.073	0.133	0.193
	STI*	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	0.00	0.05	0.10
1M-14	EPA	0.32	0.39	1.0	3.5	0.98	3.1	9.29	9.29	9.29
	SLI*	<0.03	<0.03	0.14	0.48	0.089	0.45	1.16	1.19	1.22
1M-08	EPA	3.1	2.3	8.3	26	9.4	43	122	122	122
	*ITS	<0.2	0.70	3,30	19.4	2.65	13.8	39.8	39.9	40.0
1M-10	EPA	8.4	9.5	18	83	16	65	200	200	200
	SLI*	0.51	0.81	5.41	19.8	3.15	14.1	43.8	43.8	43.8
1M-07	EPA	2.2	2.2	7.4	56	5.2	18	19	61	61
	SLI*	1.00	1.07	5.63	16.9	3.26	14.2	42.1	42.1	42.1
1M-34	EPA	0.22	0.14	0.10	90.0	0.13	0.20	0.756	0.806	0.856
	SLI	<0.0>	<0.0>	<b>*0°0</b>	<0.03	<0.03	<0.03	0.000	0.12	0.23

\* These SLI values were later determined to be inaccurate.

Table 28. Initial Fish Reruns Within SLI of "Good Day" Samples

TVA	Type \star	X		(μ <b>g/g</b> )		(µg/g)	DDE (	(µg/g)	Total		(µg/g)
LAB ID	sample	Lipids	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	Min	Avg	Max
1M-27	RR	0.19	0.05	0.05	0.03	0.09	0.03	0.13	0.38	0.38	0.38
	OV	0.54	0.13	0.12	0.046	0.16	0.073	0.32	0.849	0.849	
1-072	RR	0.06	0.04	0.08	0.33	0.82	0.10	0.40	1.77	1.77	1.77
	OV	0.12	0.055	0.040	0.52	1.30	0.16	0.67	2.74	2.74	2.74
1-078	RR	0.07	0.03	0.03	0.18	0.48	0.06	0.26	1.04	1.04	1.04
	ov	0.16	<0.03	0.092	0.29	0.90	0.099	0.45	1.83	1.85	1.86
1-083	RR	3.30	0.05	0.10	0.16	0.65	0.15	1.12	2.23	2.23	2.23
	ov	1.34	<0.02	0.076	0.054	0.24	0.087	0.42	0.877	0.887	0.897
1-089	RR	1.27	3.17	2.61	41.0	115	18.2	60.4	240	240	240
	O <b>V</b>	2.42	2.00	2.81	17.2	66.0	8.75	33.7	130	130	130
1-109	RR	0.28	<0.02	<0.03	<0.01	0.05	<0.01	0.07	0.12	0.155	0.19
	ov	0.18	<0.02	<0.02	<0.02	0.02		0.069	0.089	0.124	0.159
1-111	RR	3.81	0.53	0.83	6.51	31.9	3.94	21.0	64.7	64.7	64.7
	OV	2.24	1.08	1.23	5.73	21.1	2.97	15.2	47.3	47.3	47.3
1-113	RR	2.65	0.18	0.22	0.56	1.28	0.40	1.59	4.23	4.23	4.23
	οV	0.78	0.27	0.16	0.45	0.96	0.37	1.26	3.47	3.47	3.47
1-120	RR	0.81	0.05	0.05	0.14	0.52	0.10	0.49	1.35	1.35	1.35
	ov	0.57	<0.02	<0.02	0.14	0.49	0.079	0.28	0.99	1.01	1.03
1-132	RR	0.86	0.10	0.26	0.60	3.87	0.24	2.62	7.69	7.69	7.69
	ov	0.94	0.17	0.35	0.59	3.89	0.26	3.21	8.47	8.47	8.47

<sup>\*</sup>RR - Reanalyzed SLI value.
OV - Original SLI value.

Table 29. Initial Fish Reruns Within SLI of "Bad Day" Samples

TVA LAB ID	Type * sample	% Lipids	DDT O,P'	(µg/g) P,P'	DDD O,P'	(µg/g) P,P'	DDE O,P'	(µg/g) P,P'	Total Min	DDTR Avg	(µg/g) Max
1-052	RR	1.00	0.06	0.03	<0.01	0.05	0.03	0.05	0.00	0 225	0.00
1-032	VO	1.77				0.05	0.03	0.05	0.22	0.225	
1-025	RR	0.07	0.53 <0.02	0.45 <0.02	0.12 <0.01	0.42 < 0.01	0.32	0.47	2.31	2.31	2.31
1-023	OV	0.23	<0.02		<0.01			<0.01	0.0	0.04	0.08
1-026	RR	2.20	0.02	0.022	0.31		5<0.01	0.015	0.052	0.725	
1-020	OV	0.36	<0.03	0.28	0.03	1.56	0.35	1.19	3.9	3.9	3.9
1-027	RR	0.36	0.02	0.05		0.10	0.03	0.11	0.30	0.315	
1-02/	OV	0.78	<0.02		0.08	0.22	0.07	0.29	0.73	0.73	0.73
1-029				0.055			0.068		0.677	0.787	
1-029	RR	<0.05	<0.02	<0.03	<0.01	<0.01		<0.01	0.0	0.045	
1 020	OV	0.08	<0.02	<0.02	<0.02		5<0.01	0.016	0.04	0.075	
1-030	RR	2.66	0.15	0.06	0.09	0.81	0.22	0.63	1.960	1.960	
1 021	OV	1.57	0.079		0.088		0.11	0.35	1.056	1.056	
1-031	RR	0.05	0.33	0.67	0.67	1.30	0.44	1.73	5.14	5.14	5.14
	OV	4.88	0.40	0.57	0.49	1.47	0.65	2.32	5.9	5.9	5.9
1-034	RR	<0.05	<0.02	<0.03	<0.01	<0.01		0.01	0.01	0.05	0.09
	OV	0.14	<0.02	<0.02	<0.02		3<0.01	0.055	0.073	0.108	
1-036	RR	2.79	0.09	0.17	0.29	0.72	0.21	0.66	2.14	2.14	2.14
	OV	1.43	<0.02	0.035	0.077		0.077		0.599	0.609	
1-038	RR	<0.05	<0.02	<0.03	<0.01	<0.01		0.01	0.01	0.05	0.09
	ov	0.01	<0.02	<0.02	<0.02	<0.02		<0.01	0.0	0.05	0.10
1-050	ŔR	1.27	0.09	0.03	0.12	0.51	0.10	0.35	1.2	1.2	1.2
	OV	2.00	0.03	0.07	0.14	0.49	0.14	0.43	1.3	1.3	1.3
1-064	RR	1.41	0.12	0.18	0.04	0.05	0.06	0.12	0.570	0.570	0.520
	OV	0.63	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	0.0	0.05	0.1
1-081	RR	0.71	<0.02	<0.03	<0.01	0.04	0.01	0.15	0.20	0.23	0.26
	ov	1.08	<0.03	<0.03	<0.03	<0.02	0.02	0.12	0.12	0.19	0.25
1-144	RR	0.06	<0.02	<0.02	<0.01	0.01	0.01	0.01	0.04	0.06	0.08
	OV	0.12	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	0.0	0.05	0.1
1-151	RR	0.11	<0.05	<0.06	<0.03	0.05	<0.02	0.07	0.12	0.20	0.280
	ov	0.10	<0.02	<0.02	<0.02	<0.02		<0.01	0.0	0.05	0.10
1-158	RR	0.71	0.11	0.15	0.04	0.12	0.07	0.37	0.86	0.86	0.86
	ΟV	0.89	<0.02	<0.02	<0.02		0.084		0.474	0.504	0.534
1-159	RR	<0.05	<0.01	<0.01	<0.01		<0.01	0.05	0.09	0.11	0.130
	ov	0.076	<0.02	<0.02	<0.02	<0.02		0.057	0.057	0.102	
1-160	RR	0.77	0.02	0.03	<0.01	0.05	0.02	0.11	0.230	0.235	0.240
	ov	0.11	<0.02	<0.02	<0.02	<0.02		<0.01	0.0	0.05	0.10
1-163	RR	1.53	0.08	0.07	0.20	0.71	0.15	0.55	1.76	1.76	1.76
-	OV	3.48	0.31	0.33	0.46	1.24	0.36	1.00	3.70	3.70	3.70
1-165	RR	0.70	0.03	<0.03	0.03	0.16	0.03	0.09	0.340	0.355	0.370
	ov	2.11	<0.03	<0.03	<0.03	0.25		0.18	0.670	0.725	0.78
1-166	RR	1.78	0.20	0.35	1.03	6.24	0.73	3.91	12.5	12.5	12.5
	OV	4.30	0.40	0.64	1.77	9.84	1.32	6.64	20.6	20.6	20.6

Table 29 (continued)

TVA LAB ID	Type * sample	% Lipids	DDT O,P'	(µg/g) P,P'	DDD O,P'	(μg/g) P,P'	DDE O,P'	(µg/g) P,P'	Total Min	DDTR Avg	(µg/g) Max
		0.40	0.05	.0.04	.0.00	0.60	0.00	0.75	1 (0	1 50	1 50
1-168	RR	0.69	0.05	<0.06	<0.02	0.62		0.75	1.48	1.52	1.56
	ov	0.24	<0.02	<0.02	<0.02	0.096	<0.01	0.14	0.236	0.271	0.306
1M-09	RR	7.84	0.68	0.46	2.09	8.52	1.91	8.1	21.8	21.8	21.8
	ov	6.13	0.31	0.35	1.15	4.36	1.34	4.81	12.3	12.3	12.3
1M-10	RR	10.4	1.49	1.64	12.6	52.3	7.57	33.7	109	109	109
	ov	6.54	0.51	0.81	5.41	19.8	3.15	14.1	43.8	43.8	43.8
1M-37	RR	6.02	5.75	7.56	56.4	210	27.9	95.9	403	403	403
	ov	7.46	13.7	18.0	90.2	291	47.2	141	601	601	601
1M-38	RR	8.22	4.69	6.22	83.7	256	32.0	123	506	506	506
	ov	3.68	4.14	2.14	39.5	151	17.9	62.3	277	277	277
1M-43	RR	1.77	0.87	0.50	12.5	40.1	5.92	20.0	79.9	79.9	79.9
	ov	1.01	0.85	0.15	5.51	17.9	2.46	9.02	35.9	35.9	35.9
1M-45	RR	0.85	0.39	<0.20	4.67	16.5	2.34	8.42	32.5	32.5	32.5
	OV	0.15	0.046	<0.02	0.76	1.99	0.36	1.12	4.29	4.29	4.30

<sup>\*</sup>RR - Reanalyzed SLI value.
OV - Original SLI value.

Table 30. SLI Blind Split Fish Data During Initial Rerun Phase

TVA LAB ID	Type * sample	_	(μg/g) Ρ <b>,</b> Ρ'	DDD 0,P'	(μg/g) Ρ,Ρ'	DDE 0,P'	(µg/g) P,P'	Total Min	DDTR Avg	(µg/g) Max
IM-37	OV	5.75	7.56	56.4	210	27.9	95.9	404	404	404
	BS	5.15	7.00	52.6	196	25.7	876	374	374	374
1M-43	OV	0.87	0.50	12.5	40.1	5.92	20.0	80	80	80
	BS	1.04	0.67	16.1	50.1	7.59	25.2	101	101	101

<sup>\*</sup>OV - Original SLI value. BS - Blind split.

Table 31. Fish Reruns Within EPA at Beginning of Rerun Phase

TVA LAB ID	Type *	DDT O,P'	(µg/g) P,P'	DDD O,P'	(µg/g) _P,P'	DDE (	μg/g) P,P'	Total Min	DDTR Avg	(µg/g) Max
1~036	RR	0.062	0.066	0.12	0.34	0.14	0.37	1.10	1.10	1.10
	ov	0.30	1.7	0.39	0.67	0.38	0.50	3.94	3.94	3.94
1-151	RR	<0.03	<0.05	<0.03	0.050	0.032	0.056	0.138	0.193	0.248
	ov	<0.03	<0.05	<0.02	0.026	0.025	0.054	0,105	0.155	0.205
1M-07	RR	0.87	0.57	5.8	21	4.0	14	46.2	46.2	46.2
	O <b>V</b>	2.2	2.2	7.4	26	5.2	18	61.0	61.0	61.0
1M-08	RR	<2	<4	10	89	8.2	57	164	167	170
	O <b>V</b>	3.1	2.3	8.3	56	9.4	43	122	122	122
1M-10	RR	2.1	<3	14	60	12	41	130	131	132
	ov	8.4	9.5	18	83	16	65	200	200	200

<sup>\*</sup>RR - Reanalyzed EPA value.
OV - Original EPA value.

Table 32. SLI-EPA Fish Split Data at Beginning of Rerun Phase

TVA	Type ,	DDT	(µg/g)	DDD	(µg/g)	DDE	(µg/g)	Total	DDTR (	μ <b>g/g</b> )
LAB ID	sample	π _	P,P'	0,P'	P, P'	0,P'	P,P'	Min	Avg	Max
1-029	SLI	<0.02	<0.03	<0.01	<0.01	<0.01	<0.01	0.0	0.045	0.09
	EPA	<0.02	<0.02	<0.01	<0.01	<0.01	<0.007	0.0	0.0385	0.077
1-034	SLI	<0.02	<0.03	<0.01	<0.01	<0.01	<0.01	0.0	0.045	0.09
	EPA	<0.6	<0.5	<1	<1	<1	<1	0.0	2.55	5.1
1-036	SLI	0.09	0.17	0.29	0.72	0.21	0.66	2.14	2.14	2.14
	EPA	0.62	0.066	0.12	0.34	0.14	0.37	1.10	1.10	1.10
1-038	SLI	<0.02	<0.03	<0.01	<0.01	<0.01	0.01	0.01	0.05	0.09
	EPA	<0.02	<0.02	<0.01	<0.01	<0.01	<0.006	0.0	0.038	0.076
1-064	SLI	0.12	0.18	0.04	0.05	0.06	0.12	0.57	0.57	0.57
	EPA	<0.01	<0.07	<0.04	0.056	0.057	0.11	0.223	0.283	0.343
1-111	SLI	0.53	0.83	6.51	31.9	3.94	21.0	64.7	64.7	64.7
	EPA	<1	<3	5.2	26	2.4	16	49.6	51.6	53.6
1-151	SLI	<0.05	<0.06	<0.03	0.05	<0.02	0.07	0.12	0.2	0.28
	EPA	<0.03	<0.05	<0.03	0.050	0.032	0.056	0.138	0.193	0.248
1-165	SLI	0.03	<0.03	0.03	0.16	0.03	0.09	0.34	0.355	0.37
	EPA	0.040	<0.3	0.24	0.69	0.094	0.33	1.39	1.54	1.69
1-168	SLI	0.05	<0.06	<0.02	0.62	0.06	0.75	1.48	1.52	1.56
	EPA	<0.05	0.064	0.031	0.88	0.17	1.3	2.50	2.52	2.50
1M-7	SLI*	1.00	1.18	4.11	11.0	2.45	10.1	29.8	29.8	29.8
	EPA	0.87	0.57	5.8	21	4.0	14	46.2	46.2	46.2
1M-8	SLI*	<1.7	3.33	5.86	38.4	5.36	30.1	83.0	83.9	84.0
	EPA	<2	<4	10	89	8.2	57	164	167	170
1M-10	SLI	1.49	1.64	12.6	52.3	7.57	33.7	109	109	109
	EPA	2.1	<3	14	60	12	41	129	131	132
1M-27	SLI	0.05	0.05	0.03	0.09	0.03	0.13	0.38	0.38	0.38
	EPA	0.14	<0.2	0.048	0.14	0.080	0.028	0.436	0.536	0.636
1M-38	SLI	4.69	6.22	83.7	256	32.0	123	506	506	506
	EPA	14	10	100	310	66	150	650	650	650
1M-43	SLI	0.87	0.50	12.5	40.1	5.92	20.0	79.9	79.9	79.9
	EPA	1.7	<2	15	48	10	20	94.7	95.7	96.7

<sup>\*</sup>Samples lost in analysis during initial rerun phase and resubmitted during main rerun phase.

Table 33. Additional "Pooled" Fish Samples Analyzed During Rerun Period by EPA

EPA LAB ID	Type pooled sample	Date analyzed	DDT (	μg/g) P,P'	DDD O,P'	(ug/g) P,P'	DDE O,P'	(μg/g) P,P'	Tota Min	1 DDTR Avg	(µg/g) Max
889	high	4/03/80	7.3	6.7	37	150	33	89	323	323	323
890	high	4/03/80	5.4	5.7	32	130	28	70	271	271	271
891	high	4/03/80	6.2	5.5	33	130	28	79	282	282	282
892	low	4/03/80	0.36	0.25	0.36	1.1	0.43	0.81	3.31	3.31	3.31
893	1ow	4/03/80	0.33	0.23	0.33	0.96	0.39	0.72	2.96	2.96	2.96
894	low	4/03/80	0.67	<0.7	0.34	1.5	0.56	1.4	4.47	4.83	5.17

Table 34. SLI Blind Split Fish Data During Rerun Phase

TVA	Type *	*	DDT (	μ <b>g/g</b> )	DDD (1	μg/g)	DDE (	μ <b>g/</b> g)	Total	DDTR (	μg/g)
LAB ID	<b>sam</b> ple	Lipids	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	Min	Avg	Max_
				_							
1-021	ov	2.88	<0.02	<0.02	<0.02	0.06	0.09	0.23	0.38	0.41	0.44
	BS	3.49	<0.02	0.12	<0.02	0.11	0.15	0.33	6.71	0.73	0.75
1-037	<b>ov</b>	0.24	<0.02	0.12	0.08	0.26	0.06	0.35	0.87	0.88	0.89
	BS	0.23	<0.02	<0.02	0.06	0.26	0.06	0.35	0.71	0.73	0.75
1-138	ov	0.32	0.33	0.45	1.93	3.87	0.62	2.07	9.27	9.27	9.27
	BS	0.20	0.25	0.45	0.97	1.95	0.33	1.44	5.39	5.39	5.39
1-157	OV	0.26	0.07	0.14	0.06	0.15	0.04	0.19	0.65	0.65	0.65
	BS	0.61	0.08	0.11	0.07	0.23	0.10	0.48	1.07	1.07	1.07
1-143	O <b>V</b>	0.50	0.05	<0.02	0.64	2.30	0.34	1.00	4.33	4.34	4.35
	BS	0.04	0.05	<0.02	0.59	2.16	0.33	0.92	4.05	4.06	4.07
1-156	οV	0.05	<0.02	<0.02	<0.02	0.05	0.01	0.04	0.10	0.13	0.16
	BS	0.03	<0.02	<0.02	<0.02	0.04	<0.01	0.03	0.07	0.10	0.14
1-051	OV	2.65	0.04	0.12	0.12	0.22	0.14	0.45	1.09	1.09	1.09
	BS	0.82	<0.02	0.04	0.03	0.08	0.05	0.14	0.34	0.35	0.36
1M-07	OV	6.56	1.00	1.18	4.11	11.0	2.45	10.1	29.8	29.8	29.8
	BS	4.00	<0.04	0.55	2.49	7.22	1.41	6.40	18	18	18.1
1M-24	OV	2.68	<0.02	<0.02	<0.02	0.26	0.20	0.64	19.2	19.2	19.2
A 27	BS	5.40	0.09	0.11	0.17	0.59	0.42	1.04	2.42	2.42	2.42

<sup>\*</sup>OV - Original SLI value.
BS - Blind split.

Table 35. SLI-EPA Fish Splits During Main Rerun Phase

TVA LAB ID	Lab	DDT O,P'	(µg/g) P,P'	DDD O,P'	(µg/g) P,P'	DDE O,P'	(μg/g) P,P'	Total Min	DDTR Avg	(µg/g) Max
			<del></del>							
1M-12	SLI	0.48	0.46	0.66	2.29	0.90	2.64	7.43	7.43	7.43
	EPA	1.10	0.61	1.00	4.80	1.50	4.60	13.6	13.6	13.6
1M-19	SLI	0.77	0.62	0.33	0.90	0.41	1.01	4.04	4.04	4.04
	EPA	2.00	0.65	0.77	2.00	0.81	1.50	7.73	7.73	7.73
1M-21	SLI	0.54	0.27	1.10	4.50	0.92	3.47	10.8	10.8	10.8
	EPA	1.20	0.58	1.90	8.30	2.30	5.20	19.5	19.5	19.5
1M-22	SLI	0.50	0.44	0.30	0.96	0.70	1.11	4.01	4.01	4.01
	EPA	0.76	0.19	0.47	2.3	0.90	1.6	6.22	6.22	6.22
1-23	SLI	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	0.0	0.05	0.10
	EPA	<0.02	<0.03	<0.01	<0.01	<0.008	<0.007	0.0	0.042	0.085
1-61	SLI	<0.02	<0.02	<0.02	0.08	0.13	0.25	0.46	0.49	0.52
	EPA	0.090	0.074	0.040	0.11	0.071	0.18	0.565	0.565	0.565
1-103	SLI	<0.02	<0.02	1.21	3.84	0.73	3.25	9.03	9.05	9.07
	EPA	1.2	1.1	2.5	10.0	3.2	7.4	25.4	25.4	25.4
1-142	SLI	0.05	0.04	0.61	1.65	0.25	0.89	3.49	3.49	3.49
	EPA	<0.1	<0.2	0.45	1.4	0.29	0.73	2.87	3.02	3.17
1-146	SLI	<0.02	<0.02	<0.02	0.04	<0.01	0.12	0.16	0.195	0.23
	EPA	<0.02	<0.03	<0.008	0.009	<0.005	0.046	0.055	0.086	0.118
1M-20	SLI	0.28	0.40	0.30	2.50	0.54	1.93	5.95	5.95	5.95
	EPA	1.6	0.20	0.64	3.5	1.1	2.8	9.84	9.84	9.84

Table 36. SLI-EPA Split Data for Last Rerun of Fish and Vertebrates by SLI

TVA LAB ID	Lab	Type* sample	DDT O,P'	(μg/g) Ρ,Ρ'	DDD O,P'	(μg/g) P,P'	DDE O,P'	(µg/g) P,P'	Tota Min	1 DDTR Avg	(μg/g) Max
1M-25	SLI* EPA	Whole body	1.33 5.3	1.96 6.6	14.4 29	37.8 68	6.17 14	24.9 30	86.6 153	86.6 153	86.6 153
1M-30	SLI* EPA	Whole body	0.08 0.47	0.04 0.46	0.09	0.36 7.0	0.17 1.1	0.43 3.4	1.17 13.4	1.17 13.4	1.17 13.4
1-140A	SLI <sup>*</sup> EPA	Fish fillet	0.02 0.26	0.05 0.45	0.19 1.4	0.42 2.7	0.06 0.71	0.23 1.6	0.97 7.12	0.97 7.12	0.97 7.12
1-140B	SLI* EPA	Fish fillet	0.08	0.10 2.2	0.57 5.4	1.16 9.3	0.17 2.6	0.56 4.8	2.64 25.6	2.64 25.6	2.64 25.6
7-60	SLI <sup>*</sup> V EPA	ertebrate	<0.01 0.04	<0.01 <0.06	0.01 0.13	0.04 0.31	<0.01 0.087	0.27 3.2	0.32 3.7	0.335 3.8	0.35 3.8
7-106	SLI <sup>*</sup> V EPA	ertebrate	<0.01 0.035	0.02 0.069	<0.01 0.03	0.05 0.32	0.02 0.063	0.05 0.78	0.14 1.30	0.15 1.30	0.16 1.30
7-146	SLI <sup>*</sup> V EPA	ertebrate		0.01 <0.04	<0.01 <0.02	0.02 <0.02	<0.01 <0.01	0.10 0.11	0.13 0.11	0.145 0.17	0.16 0.23
7-57	SLI*V EPA	ertebrate		0.01 0.46	0.01 0.046	0.03 0.18	<0.01 0.022	0.02 0.088	0.08 0.825	0.085 0.825	0.09 0.825
7-148	SLI <sup>*</sup> V EPA	ertebrate	<0.01 <0.05	0.02 0.37	0.01	0.03 0.11	<0.01 0.020	0.04 0.18	0.10 0.711	0.11 0.736	0.12 0.761

<sup>\*</sup>Reanalyzed SLI values.

Table 37. SLI-EPA Split Data for Fish Samples Processed December 12, 1979, by SLI

TVA LAB ID	Lab	DDT O,P'	(µg/g) P,P'	DDD O,P'	(μg/g) P,P'	DDE O, P'	(μg/g) Ρ,Ρ'	Total Min	DDTR (	μg/g) <b>Max</b>
									,	
1M-25	EPA	5.3	6.6	29	68	14	30	153	153	153
	SLI*	1.80	2.28	17.3	45.0	6.59	20.2	93.2	93.2	93.2
1M-30	EPA	0.47	0.46	1.0	7.0	1.1	3.4	13.4	13.4	13.4
	SLI* <	<0.03	0.071	0.19	1.38	0.11	0.81	2.56	2.58	2.59
1-108	EPA <	<0.02	<0.03	0.025	0.10	0.023	0.11	0.258	0.283	0.308
	SLI*	<0.02	<0.02	<0.02	0.050	<0.01	0.059	0.109	0.144	0.179
1-171	EPA	0.25	0.30	2.0	3.7	0.84	1.9	8.99	8.99	8.99
	SLI* <	<0.02	<0.02	0.23	0.61	0.14	0.40	1.38	1.40	1.42
1-172	EPA <	<0.02	<0.03	0.014	0.054	0.024	0.083	0.175	0.1775	0.180
	SLI* <	<0.02	<0.02	<0.02	0.020	<0.01	<0.01	0.00	0.05	0.10
1-115	EPA <	<0.02	<0.03	0.019	0.087	0.026	0.097	0.229	0.254	0.279
	SLI <	<0.03	<0.03	<0.03	<0.02	<0.02	<0.02	Ó.00	0.075	0.15
1M-34	EPA	0.22	<0.14	<0.10	0.066	0.13	0.20	0.750	0.804	0.856
	SLI*	<0.05	<0.05	<0.04	<0.03	<0.03	<0.03	0.000	0.12	0.23
1M-27	EPA	0.14	<0.2	0.048	0.14	0.080	0.028	0.436	0.536	0.636
	SLI*	0.09	0.09	0.04	0.13	0.05	0.23	0.63	0.63	0.63
2M-12	EPA	2.9	1.8	63	130	14	45	260	260	260
	SLI*	0.89	0.48	11.2	23.4	2.9	8.37	47.2	47.2	47.2
2M-15		<0.4	0.62	16	43	3,3	12	74.9	75.1	75.3
	SLI*	0.60	0.47	9.85	37.6	3.31	10.7	62.5	62.5	62.5

<sup>\*</sup>Original data generated by SLI.

Table 38. Consolidated Valid SLI Blind Split Fish Data

TVA LAB ID	Type sample	* O,P'	(µg/g) P,P'	DDD O,P'	(µg/g) Թ,թ՝	DDE O,P'	(µg/g) P,P'	Total Min	DDTR Ave	(µg/g) Max
1477			d.:12			<u></u>		<u>::::::</u> ::	1170	
1-008	BLI	0.020	0.030	<0.030	0.150	0.040	0.150	0.390	0.405	0.420
	ORI	0.050	0.040	0.030		0.070		0.760	0.760	
1-012	BLI		<0.020		<0.020	0.310		0.380	0.420	
	ORI		<0.020		<0.020	<0.010		0.020	0.065	
1-017B	BLI		<0.020	<0.020	0.230	0.057	0.280	0.567	0.597	0.627
	ORI	0.034	0.032	0.024	0.290	0.067	0.300	0.746	0.747	0.746
1-031A	BLI	<0.020	<0.020	0.042		0.076	0.160	0.438	0.458	0.478
	ORI	<0.020	<0.020	<0.020	<0.020	<0.010	0.020	0.020	0.065	0.110
1-052C	BLI	0.057	0.036	<0.020	0.048	0.064	0.067	0.272	0.282	
	ORI	0.220	0.170	<0.010	0.140	0.340	0.410	1.280	1.28	1.290
1-056D	BLI	0.130	0.300	0.100	0.340	0.140	0.280	1.29	1.29	1.29
	ORI	0.070	0.160	0.060	0.100	0.100	0.190	0.680	0.680	0.680
1-067	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.080	0.080	0.145	0.210
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.060	0.060	0.125	0.190
1-070	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	0.000	0.075	0.150
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	0.000	0.075	0.150
1-078	BLI	<0.030	0.010	0.380	0.810	0.089	0.540	1.92	1.93	1.95
	ORI	<0.030	0.092	0.290	0.900	0.099	0.450	1.83	1.85	1.86
1-080D	BLI	0.024	0.051	0.093	0.780	0.400	0.610	1.96	1.96	1.96
	ORI	0.042	0.030	0.084	0.086	0.380	0.640	2.04	2.04	2.04
1-086F	BLI	<0.020	0.290	1.86	11.9	1.48	7.61	23.1	23.2	23.2
	ORI	0.240	0.330	2.15	9.11	1.14	5.83	18.8	18.8	18.8
1-089D	BLI	1.48	0.340	20.1	52.9	9.10	32.9	117	117	117
	ORI	2.61	0.180	38.8	101	17.2	58.0	218	218	218
1-095	BLI	<0.030	0.051	<0.030	0.220	0.150		0.801	0.831	
	ORI	<0.030	0.066	<0.030	0.130	0.039	0.110	0.345	0.375	0.405
1-103A	BLI	0.290	0.300	2.08	5.85	1.23	4.24	14.0	14.0	14.0
	ORI	0.066	0.095	1.31	3.19	0.750	2.43	7.84	7.84	7.84
1-107E	BLI	<0.020	0.043	0.020	0.089	0.037	0.340	0.529	0.539	
	ORI	0.028	0.045	0.036	0.280	0.057	0.400	0.846	0.846	
1-116	BLI		<0.030	<0.030	0.190	<0.020		0.330	0.385	0.400
	ORI	0.077	0.051	0.120	0.400	0.130		1.13	1.13	1.13
1-124D	BLI	0.022	0.029	0.140		0.110		0.961	0.961	
	ORI	0.038	0.026	0.023	0.230	0.072	0.220	0.609	0.609	
1-132E	BLI		<0.020	<0.020	0.041	<0.010	0.050	0.091	0.126	
	ORI		<0.020	<0.020		<0.010	0.010	0.010	0.055	
1-163D	BLI	0.067	0.095	0.970	2.79	0.580	1.93	6.43	6.43	6.43
	ORI	0.390	0.170	2.03	5.61	1.25	4.09	13.5	13.5	13.5
1-166B	BLI	0.075	0.047	0.440	1.110	0.410	1.06	3.14	3.14	3.14
	ORI	0.043	0.061	0.370	1.02	0.380	0.930	2.80	2.80	2.80
1M~51	BLI	0.530	0.410	6.10	28.3	3.42	11.5	50.3	50.3	50.3
	ORI	0.076	0.030	0.970	4.05	0.520	1.61	7.26	7.26	7.26

Table 38 (continued)

LAB ID	Type , sample	0,P'	(μg/g) P,P'	DDD (	μg/g) P,P'	DDE (	μg/g) Ρ,Ρ'	Total Min	DDTR (	μg/g) Max
	<u>:</u>									
2M-01	B1.1		<0.020	<0.030		<0.020	0.240	0.330	0.372	0.420
	ORI		<0.020	<0.020	0.180	0.035	0.140	0.418	0.438	0.458
2M-15	BLI	1.02	0.810	16.3	63.6	5.46	18.0	105	105	105
	ORI	0.190		3.40	11.6	1.15	3.37	19.8	19.8	19.8
1M-27	RR	0.05	0.05	0.03	0.09	0.03	0.13	0.38	0.38	0.38
	ov	0.13	0.12	0.046	0.16	0.073	0.32	0.849	0.849	0.849
1-072	RR	0.04	0.08	0.33	0.82	0.10	0.40	1.77	1.77	1.77
	ov	0.055	0.040	0.52	1.30	0.16	0.67	2.74	2.74	2.74
1-078	RR	0.03	0.03	0.18	0.48	0.06	0.26	1.04	1.04	1.04
	ov	<0.03	0.092	0.29	0.90	0.099	0.45	1.83	1.85	1.86
1-083	RR	0.05	0.10	0.16	0.65	0.15	1.12	2.23	2.23	2.23
	OA	<0.02	0.076	0.054	0.24	0.087	0.42	0.877	0.887	0.897
1-089	RR	3.17	2.61	41.0	115	18.2	60.4	240	240	240
	ov	2.00	2.81	17.2	66.0	8.75	33.7	130	130	130
1-109	RR	<0.02	<0.03	<0.01	0.05	<0.01	0.07	0.12	0.155	0.19
	ov	<0.02	<0.02	<0.02	0.02	<0.01	0.069	0.089	0.124	0.159
1-111	RR	0.53	0.83	6.51	31.9	3.94	21.0	64.7	64.7	64.7
	ov	1.08	1.23	5.73	21.1	2.97	15.2	47.3	47.3	47.3
1-113	RR	0.18	0.22	0.56	1.28	0.40	1.59	4.23	4.23	4.23
	ov	0.27	0.16	0.45	0.96	0.37	1.26	3.47	3.47	3.47
1-120	RR	0.05	0.05	0.14	0.52	0.10	0.49	1.35	1.35	1.35
	OV	<0.02	<0.02	0.14	0.49	0.079	0.28	0.99	1.01	1.03
1-132	RR	0.10	0.26	0.60	3.87	0.24	2.62	7.69	7.69	7.69
	ov	0.17	0.35	0.59	3.89	0.26	3.21	8.47	8.47	8,47
1-021	OV	<0.02	<0.02	<0.02	0.06	0.09	0.23	0.38	0.41	0.44
	BS	<0.02	0.12	<0.02	0.11	0.15	0.33	0.71	0.73	0.75
1-037	OV	<0.02	0.12	0.08	0.26	0.06	0.35	0.87	0.88	0.89
	BS	<0.02	<0.02	0.06	0.26	0.06	0.35	0.71	0.73	0.75
1-138	<b>ov</b>	0.33	0.45	1.93	3.87	0.62	2.07	9.27	9.27	9.27
	BS	0.25	0.45	0.97	1.95	0.33	1.44	5.39	5.39	5.39
1-157	O <b>V</b>	0.07	0.14	0.06	0.15	0.04	0.19	0.65	0.65	0.65
	BS	0.08	0.11	0.07	0.23	0.10	0.48	1.07	1.07	1.07
1-143	ov	0.05	<0.02	0.64	2.30	0.34	1.00	4.33	4.34	4.35
	BS	0.05	<0.02	0.59	2.16	0.33	0.92	4.05	4.06	4.07
1-156	ov	<0.02	<0.02	<0.02	0.05	0.01	0.04	0.11	0.14	0.16
	BS	<0.02	<0.02	<0.02	0.04	<0.01	0.03	0.07	0.10	0.14
1-051	OV	0.04	0.12	0.12	0.22	0.14	0.45	1.09	1.09	1.09
	BS	<0.02	0.04	0.03	0.08	0.05	0.14	0.34	0.35	0.36
1M-07			1.18	4.11		2.45	10.1	29.8	29.8	29.8
	BS	<0.04	0.55	2.49	7.22	1.41	6.40	18	18	18.1
1M-24	OV	<0.02	<0.02	<0.02	0.26	0.20	0.64	19.2	19.2	19.2
	BS	0.09	0.11	0.17	0.59	0.42	1.04	2.42	2.42	2.42
1M-37	ov	5.75	7.56	56.4	210	27.9	95.9	404	404	404
	BS	5.15	7.00	52.6	196	25.7	87.6	374	374	374
1M-43	OV	0.87	0.50	12.5	40.1	5.92	20.0	80	80	80
	BS	1.04	0.67	16.1	50.1	7.59	25.2	101	101	101

<sup>\*</sup>BLI - Blind sample.

ORI - Regular original sample.

RR - Reanalyzed SLI value.

OV - Original SLI value. BS - Blind split.

Table 39. Complete Listing of All SLI-EPA Fish Split Data

				<del></del>	
TVA		DDT $(\mu g/g)$	DDD (µg/g)	DDE (µg/g)	Total DDTR (µg/g)
LAB ID	Lab	0,P' P,P'	0,P' P,P'	0,P' P,P'	Min Avg Max
1-017D	EPA	0.22 0.17	0.40 0.95	0.25 0.76	2.75 2.75 2.75
	SLI	0.14 0.13	0.37 0.81	0.19 0.66	2.30 2.30 2.30
1-017F	EPA	0.050 < 0.20	0.12 1.80	0.34 1.4	3.71 3.81 3.91
	SLI	0.035 0.087	0.076 1.02	0.21 0.81	2.34 2.24 2.24
1-052B	EPA	0.46 < 0.35	<0.10 0.31	0.087 0.44	1.30 1.52 1.75
	SLI	0.10 0.052	<0.02 0.10	0.099 0.18	0.531 0.541 0.551
1-056D	EPA	0.19 < 0.030	0.21 0.48	0.12 0.36	1.36 1.51 1.66
	SLI	0.13 0.30	0.10 0.34	0.14 0.28	1.29 1.29 1.29
	SLI	0.070 0.16	0.060 0.10	0.10 0.19	0.68 0.68 0.68
1-08D	EPA	<0.50 0.53	9.9 27	4.8 8.8	51.0 51.3 51.5
	SLI	0.35 0.25	10.3 20.1	4.19 8.81	44.0 44.0 44.0
			20 07	00 //	102 100 000
1-089D	EPA	<5 <5	30 97	20 46	193 198 203
	SLI	1.48 0.34	20.1 52.9	9.1 32.9	117 117 117
	SLI	2.61 0.18	38.8 101	17.2 58.0	218 218 218
1-130B	EPA	<0.020 <0.020	0.080 0.34	0.06 0.32	0.80 0.82 0.84
1-1308	SLI	<0.020 <0.020 <0.02	0.031 0.15	0.015 0.14	0.336 0.336 0.336
	SLI	10.020 10.02	0.031 0.13	0.013 0.14	0.550 0.550 0.550
1-132C	EPA	<1.0 <2.0	0.79 9.6	1.0 7.0	1°.4 19.9 21.4
1-1320	SLI	0.41 0.54	0.82 6.81	0.68 5.08	1+.3 14.3 14.3
	JLI	0.41 0.54	0.02 0.01	0.00 5.00	14.5 14.5 14.5
1-138A	EPA	<0.08 0.12	0.30 0.68	0.14 0.24	1.48 1.52 1.56
1 13011	SLI	0.091 0.490		0.86 2.20	11.9 11.9 11.9
	021	0.072 0.170	3102 3120	0,00 2,120	1117
1-086	EPA	0.29 0.22	0.80 2.8	0.60 1.8	6.51 6.51 6.51
	SLI	0.58 0.70	1.17 5.66	0.98 3.70	12.8 12.8 12.8
1-113	EPA	0.31 0.36	0.30 0.75	0.37 1.2	3.29 3.29 3.29
	SLI	0.27 0.16	0.45 0.96	0.37 1.26	3.47 3.47 3.47
	SLI	0.18 0.22	0.56 1.28	0.40 1.59	4.23 4.23 4.23
1-109	EPA	<0.03 <0.04	<0.03 0.33	0.12 0.078	0.123 0.153 0.223
	SLI	<0.020 <0.020	<0.020 0.02	<0.010 0.069	0.089 0.124 0.159
	SLI	<0.02 <0.03	<0.01 0.05	<0.01 0.07	0.12 0.115 0.19

Table 39 (continued)

TVA LAB ID	Lab	DDT (μg/g) Ο,Ρ' Ρ,Ρ'	DDD (μg/g) Ο,Ρ' Ρ,Ρ'	DDE (μg/g) Ο,Ρ' Ρ,Ρ'	Total DDTR (μg/g) Min Avg Max
1-098	EPA	0.25 1.0	1.9 3.9	0.75 1.6	9.40 9.40 9.40
	SLI	<0.02 0.12		0.063 0.43	0.803 0.823 0.843
1-078	EPA	<0.07 0.04		0.14 0.27	1.24 1.27 1.30
	SLI SLI	<0.03 0.01 <0.03 0.09		0.089 0.54 0.099 0.45	1.92 1.93 1.95 1.83 1.85 1.86
1M-34	EPA	0.22 0.14			0.756 0.806 0.856
	SLI	<0.05 <0.05	<0.04 <0.03	<0.03 <0.03	0.000 0.12 0.23
1-029	SLI	<0.02 <0.03		<0.01 <0.01	0.0 0.045 0.09
	EPA	<0.02 <0.02		<0.01 <0.007	0.0 0.0385 0.077
1-034	SLI EPA	<0.02 <0.03 <0.6 <0.5	<0.01 <0.01 <1 <1	<0.01 0.01 <1 <1	0.0 0.045 0.09 0.0 2.55 5.1
1-036	SLI	0.09 0.17		0.21 0.66	2.14 2.14 2.14
1-050	EPA	0.062 0.06		0.14 0.37	1.10 1.10 1.10
	EPA	0.30 1.7	0.39 0.67	0.38 0.50	3.94 3.94 3.94
1-038	SLI	<0.02 <0.03		<0.01 0.01	0.01 0.05 0.09
	EPA	<0.02 <0.02	<0.01 <0.01	<0.01 <0.006	0.0 0.038 0.076
1-064	SLI	0.12 0.18 <0.01 <0.07		0.06 0.12 0.057 0.11	0.57 0.57 0.57 0.223 0.283 0.343
	EPA SLI	<0.01 <0.07 1.08 1.23		2.97 15.2	47.3 47.3 47.3
1-111	SLI	0.53 0.83		3.94 21.0	64.7 64.7 64.7
	EPA	<1 <3	5.2 26	2.4 16	49.6 51.6 53.6
1-151	SLI	<0.05 <0.06		<0.02 0.07	0.12 0.2 0.28
	EPA	<0.03 <0.05			0.138 0.193 0.248 0.105 0.155 0.205
	EPA	0.03 0.05			
1-165	SLI	0.03 < 0.03		0.03 0.09 0.094 0.33	0.34 0.355 0.37 1.39 1.54 1.69
	EPA	0.040 < 0.3	0.24 0.69		
1-168	SLI EPA	0.05 < 0.06 < 0.05 0.06		0.06 0.75 0.17 1.3	1.48 1.52 1.56 2.45 2.47 2.50
1M-7	SLI	1.00 1.18		2.45 10.1 3.26 14.2	29.8 29.8 29.8 42.1 42.1 42.1
	SLI EPA	1.00 1.07 0.87 0.57	5.63 16.9 5.8 21	4.0 14	46.2 46.2 46.2
	EPA	2.2 2.2	7.4 26	5.2 18	61 61 61

Table 39 (continued)

TVA LAB ID	Lab	DDT O,P'	(µg/g) P,P'	DDD (	(µg/g) P,P'	DDE (	(μg/g) Ρ,Ρ'	Total Min	DDTR Avg	(μg/g) Max
1M-8	SLI	<1.7	3.33	5.86	38.4	5.36	30.1	83.0	83.9	84.0
	EPA	3.1	2.3	8.3	56	9.4	43	122	122	122
	EPA	<2	<4	10	89	8.2	57	162	165	168
1M-10	SLI	1.49	1.64	12.6	52.3	7.57	33.7	109	109	109
	EPA	8.4	9.5	18	83	16	65	200	200	200
	EPA	2.1	<3	14	60	12	41	129	131	132
	SLI	0.13	0.12	0.046	0.16	0.073	0.32	0.849	0.849	0.849
1M-27	SLI	0.05	0.05	0.03	0.09	0.03	0.13	0.38	0.38	0.38
	EPA	0.14	0.2	0.048	0.14	0.080	0.028	0.436	0.536	0.636
1M-38	SI.I	4.69	6.22	83.7	256	32.0	123	506	506	506
	EPA	14	10	100	310	66	150	650	650	650
1M-43	SLI	0.87	0.50	12.5	40.1	5.92	20.0	79.4	79.4	79.4
	EPA	1.7	<2	15	48	10	20	94.7	95.7	96.7
1M-12	SLI EPA	0.48	0.46 0.61	0.66 1.00	2.29 4.80	0.90 1.50	2.64 4.60	7.43 13.6	7.43 13.6	7.43 13.6
1M~19	SLI	0.77	0.62	0.33	0.90	0.41	1.01	4.04	4.04	4.04
	EPA	2.00	0.65	0.77	2.00	0.81	1.50	7.73	7.73	7.73
1M-21	SLI	0.54	0.27	1.10	4.50	0.92	3.47	10.8	10.8	10.8
	EPA	1.20	0.58	1.90	8.30	2.30	5.20	19.5	19.5	19.5
1M-22	SLI	0.50	0.44	0.30	0.96	0.70	1.11	4.01	4.01	4.01
	EPA	0.76	0.19	0.47	2.3	0.90	1.6	6.22	6.22	6.22
1-23	SLI	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	0.00	0.05	0.10
	EPA	<0.02	<0.03	<0.01	<0.01	<0.008	<0.007	0.0	0.042	0.085
1-61	SLI	<0.02	<0.02	<0.02	0.08	0.13	0.25	0.46	0.49	0.52
	EPA	0.090	0.074	0.040	0.11	0.071	0.18	0.565	0.565	0.565
1-103	SLI	<0.02	<0.02	1.21	3.84	0.73	3.25	9.03	9.05	9.07
	EPA	1.2	1.1	2.5	10.0	3.2	7.4	25.4	25.4	25.4

Table 39 (continued)

TVA LAB ID	Lab	DDT O,P'	(µg/g) P,P'	DDD O,P'	(μg/g) P,P'	DDE O,P'	(µg/g) P,P'	Total Min	DDTR (	μg/g) Max
1-142	SLI	0.05	0.04	0.61	1.65	0.25	0.89	3.49	3.49	3.49
	EPA	<0.1	<0.2	0.45	1.4	0.29	0.73	2.87	3.02	3.17
1-146	SLI	<0.02	<0.02	<0.02	0.04	<0.01	0.12	0.16	0.195	0.23
	EPA	<0.02	<0.03	<0.008	0.009	<0.005	0.046	0.055	0.086	0.118
1M-20	SLI	0.28	0.40	0.30	2.50	0.54	1.93	5.95	5.95	5.95
	EPA	1.6	0.20	0.64	3.5	1.1	2.8	9.84	9.84	9.84
1M-25	EPA	5.3	6.6	29	68	14	30	153	153	153
	SLI	1.80	2.28	17.3	45.0	6.59	20.2	93.2	93.2	93.2
1M-30	EPA	0.47	0.46	1.0	7.0	1.1	3.4	13.4	13.4	13.4
	SLI	<0.03	0.071	0.19	1.38	0.11	0.81	2.56	2.58	2.59
1-108	EPA	<0.02	<0.03	0.025	0.10	0.023	0.11	0.258	0.283	0.308
	SLI	<0.02	<0.02	<0.02	0.050	0.01	0.059	0.109	0.144	0.179
1-171	EPA	0.25	0.30	2.0	3.7	0.84	1.9	8.99	8.99	8.99
	SLI	<0.02	<0.02	0.23	0.61	0.14	0.40	1.38	1.40	1.42
1-172	EPA	<0.02	<0.03	0.014	0.054	0.024	0.083	0.175	0.1775	0.180
	SLI	<0.02	<0.02	<0.02	0.020	<0.01	<0.01	0.00	0.05	0.10
1-115	EPA	<0.02	<0.03	0.019	0.087	0.026	0.097	0.229	0.254	0.279
	SLI	<0.03	<0.03	<0.03	<0.02	<0.02	<0.02	0.00	0.075	0.15
1-58	EPA	<0.03	<0.04	<0.02	<0.1	0.22	0.065	0.285	0.38	0.475
	SLI	0.05	0.05	0.06	0.20	0.07	0.16	0.59	0.59	0.59
2M-12	EPA	2.9	1.8	63	130	14	45	260	260	260
	SLI	0.89	0.48	11.2	23.4	2.90	8.37	47.2	47.2	47.2
2M-15	EPA	<0.4	0.62	16	43	3.3	12	74.9	75.1	75.3
	SLI	0.19	0.13	3.40	11.6	1.15	3.37	19.8	19.8	19.8
	SLI	1.02	0.81	16.3	63.6	5.46	18.0	105	105	105
1-26	EPA	0.92	0.32	0.57	1.8	0.64	1.60	5.85	5.85	5.85
	SLI	0.23	0.26	0.31	1.56	0.35	1.19	3.90	3.90	3.90
1-50	EPA	0.088	0.045	0.052	0.19	0.12	0.22	0.715	0.715	0.715
	SLI	0.09	0.03	0.12	0.51	0.10	0.35	1.20	1.20	1.20
1-53	EPA	0.04	0.042	0.027	0.099	0.053	0.26	0.521	0.521	0.521
	SLI	0.02	0.08	0.02	0.06	0.03	0.18	0.39	0.39	0.39
1-144	EPA	<0.02	<0.05	<0.02	0.019	<0.02	0.054	0.073	0.133	0.193
	SLI	<0.02	<0.02	<0.01	0.01	<0.01	0.01	0.020	0.050	0.180

Sample Description: Channel catfish (472 mm long, 790 g total weight, 140 g fillet weight) from Indian Creek mile 1.0 on 9/12/79.

### Fillet Quarter

	Length	DDT (	μg/g)	DDD	(µg/g)	DDE	(µg/g)	$\mathtt{DDTR}^{a}$	Lipids
No.	(mm)	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	$(\mu g/g)$	(%)
ıb	65	1.31	1.75	20.6	62.5	7.39	27.4	121	0.60
2	65	4.50	5.38	66.9	189	22.5	70.0	358	1,55
3	65	4.28	3.65	49.7	139	16.0	53.1	266	1.29
4	65	7.28	8.52	120	321	40.8	124	622	3.32

II. Sample Description: Smallmouth buffalo (380 mm long, 970 g total weight, 150 g fillet weight) from Indian Creek mile 1.0 on 9/12/79.

### Fillet Quarter

No.	Length (mm)	DDT (μg/g) O,P' P,P'	DDD (μg/g) O,P' P,P'	DDE (µg/g) O,P' P,P'	DDTR <sup>a</sup> _(µg/g)	Lipids (%)
			· · · · · · · · · · · · · · · · · · ·		(FB/ B/	
1 <sup>b</sup>	62	0.21 < 0.06 <sup>c</sup>	19.1 41.8	5.70 16.6	83.4	7.08
2	62	0.81 0.76	25.0 52.2	6.52 20.7	106	8.91
3	62	0.64 0.53	11.5 53.1	3.39 7.95	77.1	4.24
4	62	0.92 1.07	22.7 50.3	8.39 16.2	99.6	8.27

III. Sample Description: Largemouth bass (390 mm long, 970 g total weight, 160 g fillet weight) from Indian Creek mile 1.0 on 9/12/79.

## Fillet Quarter

No.	Length (mm)	DDT (µg/g) O,P' P,P'	DDD (μg/g) O,P' P,P'	DDE (µg/g) O,P' P,P'	DDTR <sup>a</sup> (µg/g)	Lipids (%)
, b	57	0 61 <0 6 <sup>C</sup>	2.78 5.44	0.87 2.61	10 0	0.37
2	57			0.49 1.83	12.3 7.62	0.27 0.17
3	57	0.43 0.67		0.96 3.07	15.1	0.17
4	57	<0.9° 0.91	2.05 3.86	0.53 1.89	9.2	0.18

<sup>&</sup>lt;sup>a</sup>All analyses performed by SLI. Head end.

Higher detection limit was used because of interferences.

Table 41. Special Study - Migration of Lipids Within the "Pooled" Fish Samples

Sample identification	Type	% Li	pids	Total DD	TR (µg/g)
or appearance	sample*	EPA	SLI	EPA	SLI
Outside ring only**	Low QC	9.1	8.49	3.9	6.92
Outer half minus ring**	Low QC	6.3	6.15	3.5	4.21
Inner half only	Low QC	6.6	3.84	4.1	2.39
Sample contained large outside ring	Low QC	6.3	5.03	3.9	3.86
Sample contained medium outside ring	Low QC	5.9	5.16	2.6	3.23
Sample contained small outside ring	Low QC	6.5	5.02	2.8	3.32
Surface removed, and remainder of sample analyzed	Low QC	-	3.55	-	2.73
Extreme - whole surface covered	High QC	2.7	1.75	280	222
25 to 75% of surface covered	High QC	2.6	2.29	240	349
5 to 25% of surface covered	High CC	2.5	2.53	250	365
Ring only	High QC	2.4	2.52	280	347
Ring only	High QC	2.6	2.56	260	315
White only analyzed	High QC	<0.6	5.37	210	447

<sup>\*</sup>Low QC - Low concentration of "pooled" fish sample. High QC - High concentration of "pooled" fish sample.

<sup>\*\*</sup>See Figure 3.

Table 42. SLI Blind Split Vertebrate Data

LAB 1D			(n8/8/	2	(3/8/2/	DDE	(ng/g)	101	TOTAL DUIK	(2/81)
	sample*		P P P	0,P'	P, P'	0,P'	P.P.	Minimum	erage	Maximum
7-015	BLI	0.440	0.290	<0.030	0.360	0.091	4.77	5.95	5.97	5.98
	ORI	0.190	<0.030	<0.030	0.260	0.069	1.56	2.08	2.11	2.14
7-024	BLI	<0.030	0.093	0.130	0.680	0.210	1.37	2.50	2.52	2.53
	ORI	<0.030	<0.030	0.320	3.220	0.430	2.67	6.64	6.67	6.70
7-038	BLI	<0.030	0.140	0.570	2.180	0.660	4.10	7.65	7.66	7.68
	ORI	<0.030	<0.030	0,180	0.590	0.180	1.28	2.23	2.26	2.29
7-050	BLI	<0.030	<0.030	<0.030	0.063	<0.020	0.09	0.153	0.208	0.263
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	0000	0.075	0.150
7-063	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	0000	0.075	0.150
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	000.0	0.075	0.150
7-089	BLI	<0.040	<0.040	<0.040	<0.020	<0.030	<0.020	000.0	0.095	0.190
	ORI	<0.040	<0.030	<0.030	<0.020	<0.020	<0.020	000.0	0.080	0.160
7-102	BLI	<0.040	0.036	<0.030	0.280	<0.020	1.39	1.71	1.75	1.80
	ORI	0.063	0.065	0.150	0.00	0.092	5.07	6.34	6.34	6.34
7-112	BLI	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010	0000	0.500	1.000
	ORI	<0.030	<0.020	<0.020	<0.020	<0.010	<0.010	0000	0.055	0.110
7-114	BLI	0.092	<0.020	<0.020	<0.020	<0.020	<0.010	0.092	0.137	0.182
	ORI	0.059	<0.030	<0.020	<0.020	<0.020	<0.010	0.059	0.084	0.159
7-132	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	000.0	0.075	0.150
	ORI	0.053	<0.030	<0.030	<0.020	<0.020	0.029	0.082	0.132	0.182
7-365	BLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.100	0.100	0.165	0.230
	ORI	<0.030	<0.030	<0.030	<0.020	<0.020	0.072	0.072	0,137	0.202

\* BLI - Blind sample. ORI - Regular original sample.

Table 43. SLI-EPA Split Vertebrate Data

TVA		) TOO	ug/g)	) aaa	(µg/g)	DDE	(ug/g)	To	Fotal DDTR	(ng/g)
LAB ID	Lab	0,P'	P,P'	0,P'	P, P'	0,P'	P, P'	Mininum	rage	Maximum
7-010	EPA	0.047	0.04	30	0.045	038	0.510	0.687	0.702	0.717
	SLI	<0.030	<0.030	<0.030	<0.020	<0.020	0.049	0.049	0.114	0.179
7-024	EPA	<2.000	0.590	Q	18.0	2.70	15.0	37.7	38.7	39.7
	SLI	<0.030	<0.030	20	3.22	0.430	2.67	4.41	4.42	4.44
7-033	EPA	0.110	<0.200	20	0.067	0.069	1.20	1.45	1.57	1.70
	SLI	<0.030	<0.030	30	<0.020	<0.020	0.170	0.170	0.235	0.300
7-036S	EPA	<0.030	<0.040	070	<0.010	<0.020	0.036	0.036	0.086	0.156
	SLI	<0.030	<0.030	30	<0.020	<0.020	0.072	0.080	0.145	0.210
7-040T	EPA	<0.030	<0.040	115	0.051	0.015	0.480	0.560	0.596	0.631
	SLI	<0.020	<0.020	20	0.093	0.022	00,00	0.515	0.545	0.575
7-044	EPA	3.60	18.0	Q	2.10	0.320	1.10	26.5	26.5	26.5
	$S\Gamma I$	<0.030	<0.030	30	<0.020	<0.020	0.080	0.150	0.260	0.370
7-065	EPA	<0.030	<0.040	070	<0.010	<0.020	<0.010	0000	0.065	0.130
	SLI	<0.020	<0.020	20	<0.020	<0.010	<0.010	000.0	0.050	0.100
7-074	EPA	0.035	0.037	80	<0.010	0.004	0.018	0.084	0.093	0.102
	SLI	<0.020	<0.020	070	<0.020	<0.010	<0.010	0000	0.050	0.100
7-082	EPA	0.081	1.80	7	0.990	0.032	0.096	3.14	3.14	3.14
	SLI	<0.020	<0.020	20	<0.020	<0.010	0.010	0.010	0.055	0.100
7-086	EPA	<0.008	<0.010	905	<0.00>	<0.003	0.007	0.007	0.022	0.038
	SLI	<0.020	<0.020	20	<0.020	<0.010	<0.010	000.0	0.050	0.100
7-060	EPA	0.040	<0.060	30	0.310	0.087	3.20	3.77	3.80	3.83
	SLI	<0.020	<0.020	33	0.093	<0.010	0.780	0.906	0.931	0.956
7-106	EPA	0.035	0.069	30	0.320	0.063	0.780	1.30	1,30	1.30
	SLI	<0.020	<0.020	20	0.130	<0.010	0.300	0.430	0.465	0.500
7-146	EPA	<0.030	<0.040	20	<0.020	<0.010	0.110	0.110	0.170	0.230
	SLI	<0.020	0.460	747	0.140	0.011	090.0	0.718	0.728	0.738
7-057	EPA	0.029	0.460	97(	0.180	0.022	0.088	0.825	0.825	0.825
	SLI	<0.020	<0.020	20	<0.020	<01010>	<0.130	000.0	0.110	0.220
7-148	EPA	<0.050	0.370	31	0.110	0.020	0.180	0.711	0.736	0.761
	SLI	<0.020	0.061	070	0.036	<0.010	0.074	0.171	0.196	0.221
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Table 44. Macroinvertebrate SLI Blind Split Sample Data

		Table 44.		ivertebrac	macionnyertebrate our binn opint sample bata	ı əpiit əg	mbre para			
TVA	Type	DDT	Ē	1) 000	(8/8n) (	DDE	DDE (µg/g)	Tot	Total DDTR (µg/g)	ug/8)
LAB ID	sample*		P.P'	0,P'	P,P'	0,P'	P.P.	Minimum	Minimum Average Maximum	Maximum
5-003	BLI	0.020	0.009	0.400	0.730	0.230	0.510	1.90	1.90	1.90
	ORI	0.020	0.010	0.530	0.900	0.270	0.660	2.39	2.39	2.39
5-004	BLI	0.010	0.010	0,550	0.820	0.290	0.620	2.30	2.30	2.30
	ORI	0.010	0.020	0.570	0.950	0.320	0.740	2.61	2.61	2.61
5-047	BLI	<0.006	0.020	0.330	0.660	0,150	0.360	1.52	1.52	1.52
	ORI	<0.006	0.020	0.450	0.950	0.180	0,460	2.06	2.06	2.06

\*BLI - Blind sample, ORI - Regular original sample.

Table 45. Plant SLI Blind Split Sample Data

TVA	Type	DDT	(8/8n)	aaa	(8/8n)	) DDE (	(ng/g)	Tota	Total DDTR (u	(ng/g)
LAB ID	sample*	0,P'	P, P'	0,P'	P,P'	0, P'	P,P'	Minimum	Average	Maximum
5-125	BLI	0.002	0.002	0.020	0.047	0,003	0.013	0.087	0.087	0.087
	ORI	0.001	0.002	0.014	0.030	0.003	0.007	0.057	0.057	0.057
5-135	BLI	0.001	0.004	0.004	0.009	0.005	0.008	0.031	0.031	0.031
	ORI	0.011	0.004	0.005	0.002	0.005	0.013	0.040	0.040	0.040
5-157	BLI	<0.001	0.002	0.008	0.016	0.002	900.0	0.034	0.034	0.035
	ORI	0.001	0.008	0.016	0.034	0.004	0.011	0.074	0.074	0.074
5-162	BLI	<0.001	0.002	<0.001	0.001	0.001	0.001	0.005	0.006	0.007
	ORI	<0.001	<0.002	<0.001	<0.001	0.001	0.001	0.002	0.004	0.007
5-210	BLI	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	000.0	0.003	0.007
	ORI	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	000.0	0.003	0.007

\* BLI - Blind sample. ORI - Regular original sample.

Table 46. SLI-EPA Split Macroinvertebrate Data

TVA		DDT (	ug/g)	DDD (	μg/g)	DDE (	μg/g)	Total	DDTR	(µg/g)
LAB ID	Lab	0,P'	P,P'	O,P'	P,P'	0,P'	P,P'	Min	Avg	Max
5-003	EPA	<0.100	<0.040	1.20	2.20	1.10	2.40	6.90	6.97	7.04
	SLI	0.020	0.010	0.530	0.900	0.270	0.660	2.39	2.39	2.39
5-004	EPA	<0.080	<0.040	0.780	1.30	0.660	1.50	4.24	4.29	4.36
	SLI	0.010	0.020	0.570	0.950	0.320	0.740	2.61	2.61	2.61
5-047	EPA	<0.080	0.033	0.430	0.880	0.300	0.500	2.14	2.18	2,22
	SLI	<0.006	0.020	0.450	0.950	0.180	0.460	2.06	2.06	2.06

Table 47. SLI-EPA Split Aufwuchs Data

TVA LAB ID	Lab	DDT (		DDD (	DDE (	Total Min	DDTR (	μg/g) Max
5-188	EPA SLI	<0.100 0.003	0.120 0.010		 0.030 0.020	0.456 0.358		

Table 48. SLI-EPA Split Plant Data

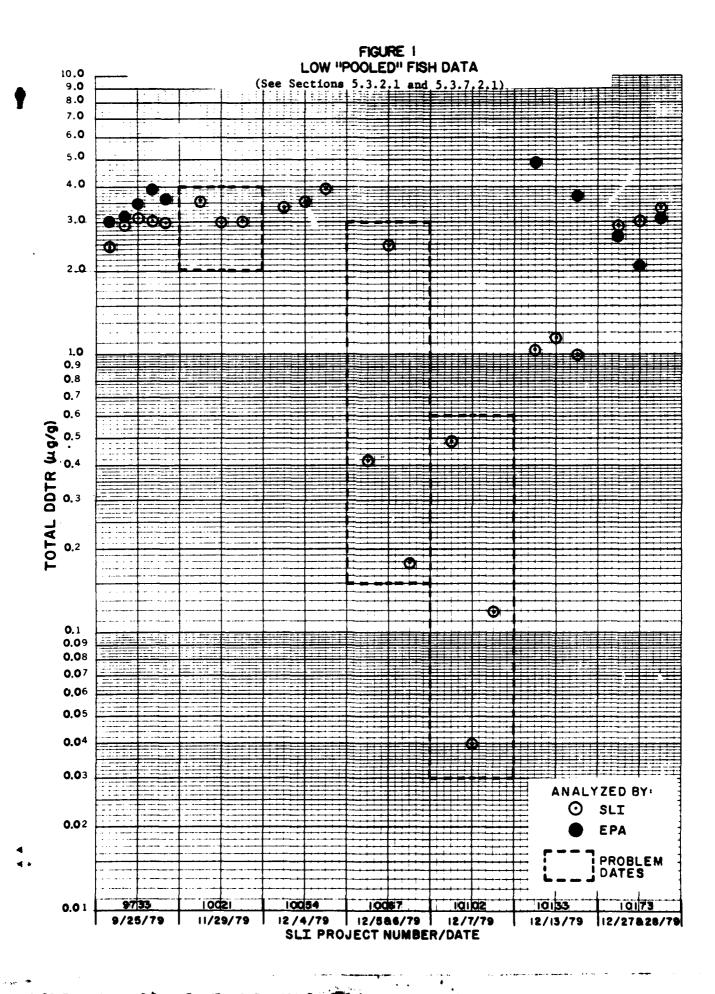
TVA		DDT	(µg/g)	DDD (	(µg/g)	DDE (	(µg/g)	Total	DDTR (	μg/g)
LAB ID	Lab	0,P'	P,P'	0,P'	P,P'	0,P'	P,P'	Min	Avg	Max
5-120	EPA	0.004	<0.009	0.003	0.011	0.002	0.005	0.024	0.028	0.033
3 120	SLI	<0.001	<0.002	0.003	0.005	0.001	0.003	0.011	0.012	0.014
5-133	EPA	<0.005	0.007	0.004	0.021	0.007	0.007	0.045	0.047	0.050
	SLI	0.002	0.004	0.005	0.013	0.008	0.007	0.039	0.039	0.039
5-139	EPA	0.005	0.017	0.015	0.022	0.012	0.016	0.087	0.087	0.087
	SLI	0.011	0.028	0.032	0.040	0.010	0.033	0.154	0.154	0.154
5-148	EPA	0.007	0.020	0.098	0.150	0.032	0.100	0.407	0.407	0.407
	SLI	0.024	0.049	0.230	0.320	0.061	0.210	0.894	0.804	0.894
5-152	EPA	0.001	0.005	0.013	0.060	0.008	0.027	0.114	0.114	0.114
	SLI	0.002	0.004	0.020	0.046	0.005	0.012	0.089	0.089	0.089
5-210	EPA	0.008	<0.006	0.019	0.052	0.006	0.012	0.097	0.100	0.103
	SLI	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	0.000	0.003	0.007

FIGURES

# FIGURES

# Number

- 1 Low "Pooled Fish Data
- 2 High "Pooled" Fish Data
- 3 Sample Identification Diagram for Migration of Lipids Experiment



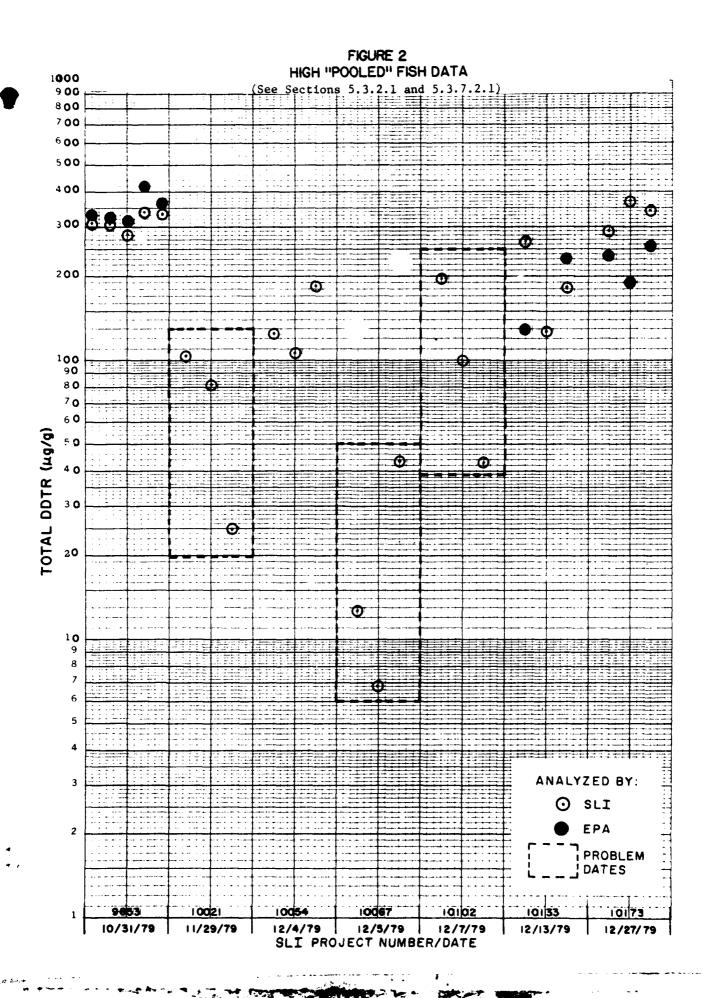
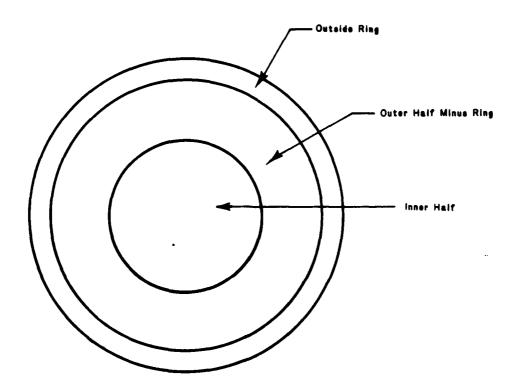


FIGURE 3
SAMPLE IDENTIFICATION DIAGRAM FOR MIGRATION OF LIPIDS EXPERIMENT

(See Section 5.3.7.2.2)



4

ANALYTICAL METHODOLOGY

**4** >

## ANALYTICAL METHODOLOGY

- 1.0 Water
- 1.1 DDT
- 1.1.1 Applicable Documents
- 1.1.1.1 "Determination of Organochlorine Pesticides in Industrial Effluents," 40 CFR 136, December 1, 1976.
- 1.1.1.2 "Sampling and Analysis Procedures for Screening of Industrial Effluents in Priority Pollutants," (1977), U.S. Environmental Protection Agency, EMSL, Cincinnati, OH 45268.
- 1.1.1.3 "Methods for Organochlorine Pesticides in Drinking Water," (1978), U.S. Environmental Protection Agency, EMSL, Cincinnati, OH 45268.
- 1.1.2 Summary of Method (EPA and SLI)
- 1.1.2.1 A 1-liter sample of water is extracted with 15% methylene chloride in hexane. The extract is dried, concentrated to a volume of 10 mL and injected into a packed gas chromatographic column (1.5% SP-2250/1.95% SP 2401). Components are separated as they pass through the column and their presence is detected and measured with a Ni<sup>63</sup> electron capture detector.
- 1.1.2.2 In the event interferences are encountered, the method provides selected general purpose cleanup procedures to aid in their elimination.
- 1.1.2.3 Sample Size--One liter for each measurement; 2 liters are usually collected for quality control work and a reserve.
- 1.1.2.4 Minimum Detectable Amount--Method sensitivity is 0.01 to  $0.03~\mu g/L~for~the~DDT~isomers~and~metabolites~when~analyzing$  a 1 liter sample.

1.1.2.5 Methodology Modification--During the course of the contract a method modification, as requested by the Project Officer, was made. Twenty-five (25) mL of a saturated sodium chloride solution was added to all water samples prior to solvent extraction.

## 1.2 Other Parameters

- 1.2.1 Applicable Documents
- 1.2.1.1 Methods for Chemical Analysis of Water and Wastes, Environmental Protection Agency, Water Quality Office, Cincinnati, Ohio, 1974.
- 1.2.1.2 "Interim Methods for Metals in Drinking Water," Environmental

  Protection Agency, Environmental Monitoring and Support Laboratory,

  Cincinnati, Ohio, April 1978.
- 1.2.1.3 "Sampling and Analysis Procedures for Screening of Industrial
  Effluents for Priority Pollutants," Environmental Protection
  Agency, Environmental Monitoring and Support Laboratory,
  Cincinnati, Ohio, April 1977.

### 1.2.2 Summary of Methods (TVA)

Parameter	Applicable Document	Type of Analysis	Detection Limit
Alkalinity	1.2.1.1, method 310.1	Titrimetric	10 mg/L
Suspended solids	1.2.1.1, pp. 268-269	Gravimetric	1 mg/L
NO <sub>2</sub> + NO <sub>3</sub> Nitrogen	1.2.1.1, pp. 207-214	Automated cadmium reduction	0.01 mg/L
NH <sub>3</sub> Nitrogen	1.2.1.1, pp. 168-174	Automated phenate	0.01 mg/L
Total and soluble PO <sub>4</sub>	1.2.1.1, pp. 249-265	Automated ascorbic acid	0.01 mg/L
Calcium	1.2.1.1, pp. 103-104	Atomic absorption, direct	0.1 mg/L
Magnesium	1.2.1.1, pp. 116-117	Atomic absorption, direct	0.1 mg/L

Parameter	Applicable Document	Type of Analysis	Detection Limit
Copper	1.2.1.1, pp. 81-83, 108	Atomic absorption, direct	0.01 mg/L
Nickel	1.2.1.1, pp. 81-83, 141-142	Atomic absorption, direct	0.01 mg/L
Mercury	1.2.1.1, pp. 118-126	Cold vapor, manual	0.0002 mg/L
Zinc	1.2.1.1, pp. 81-83, 155	Atomic absorption, direct	0.01 mg/L
Cadmium	1.2.1.2, pp. 33-34	Heated graphite atomizer	0.0001 mg/L
Arsenic	1.2.1.1, pp. 95-96	Gaseous hydride	0.002 mg/L
Beryllium	1.2.1.1, pp. 81-83, 99-100	Atomic absorption, direct	0.01 mg/L
Other priority pollutants	1.2.1.3	Gas chromatography- mass spectrometry	Various detection limits

- 2.0 Sediment
- 2.1 DDT Analysis
- 2.1.1 Applicable Documents
- 2.1.1.1 "Manual of Analytical Methods for the Analysis of Pesticide Residues in Human and Environmental Samples," U.S. Environmental Protection Agency, Pesticides and Toxic Substances Effects Laboratory, National Environmental Research Center, Research Triangle Park, North Carolina, December 1974.
- 2.1.1.2 "Ecological Evaluation of Proposed Discharge or Fill Material into Navigable Waters," WES Miscellaneous Paper D-76-17, Dredged Material Research Program (DMRP) publication, Appendix D, Total Sediment Analysis Procedures.
- 2.1.1.3 "Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissue," (1978), U.S. Environmental Protection Agency, EMSL, Cincinnati, OH 45263.

# 2.1.2 Summary of Method

- 2.1.2.1 SLI Method--The compounds of interest are extracted from airdried sediment with 15% methylene chloride in hexane (v/v).

  The sample/solvent mixture is agitated for 30 minutes on a
  mechanical shaker followed by ultrasonification for 30 minutes.

  The extract is subsequently analyzed for DDT isomers and
  metabolites using agency-approved methods.
- 2.1.2.2 EPA Method--EPA extracted the sediment samples using an ultrasonic probe. The samples were sonicated twice with 1:1 acetone:
  hexane. The extracts were water washed to remove the acetone,
  then cleaned up on Florisil.
- 2.1.3 Sample Size--20 g for each measurement; 60 g are usually collected for moisture determination, quality control work, waste, and a reserve.
- 2.1.4 Minimum Detectable Amount--0.01 µg of each isomer or metabolite per g (dry weight basis) if a 20-g sample is used.
- 2.2 Wet Sieve Analysis
- 2.2.1 Applicable Documents
- 2.2.1.1 Guy, H. P., "Laboratory Theory and Methods for Sediment Analysis"

  Book 5, Chapter Cl, in <u>Techniques of Water-Resources Investigations</u>

  of the United States Geological Survey, U.S. Government Printing

  Office, Washington, DC, 1969.
- 2.2.2 Summary of Method (TVA)
- 2.2.2.1 A 25-g aliquot of a well-mixed sediment sample is blended with 100 mL of deionized water for five minutes. This slurry is then poured into a stack of four 3-inch screens (2.0, 0.500, 0.125, and 0.063 mm). Each screen is washed with deionized water onto

the next size screen (e.g., the 2.0-mm screen is washed onto the 0.500 screen, etc.). The material retained on each sieve along with the sediment that passes through the 0.063 mm sieve is dried at  $105^{\circ}$ C. From these data, the percentage of solids finer than 2.0, 0.5, 0.125, and 0.063 mm is calculated.

2.2.3 Sample Size

25 g

- 2.2.4 Minimum Detectable Amount
  The range of this procedure is for particles ranging from greater than 2.0 mm to less than 0.063 mm.
- 2.3 Particle Size
- 2.3.1 Applicable Documents
- 2.3.1.1 Welch, N. H., P. B. Allen, and D. J. Galindo, "Particle-Size

  Analysis by Pipette and SediGraph," prepublication manuscript.
- 2.3.1.2 Instruction Manual, SediGraph 5000D Particle Size Analyzer, Micromeritics Instrument Corporation, MIC P/N 500/42801/00, Norcross, Georgia, 1978.
- 2.3.2 Summary of Method (TVA)
- 2.3.2.1 A sample previously wet-sieved through a 63 µm sieve is dispersed in a 0.05% sodium hexametaphosphate solution. The particle size distribution is determined using a SediGraph Model 5000D Particle Size Analyzer. This is determined by means of a finely collimated beam of X-rays whose transmittance indicates the concentration of particles remaining in suspension at various sedimentation depths as a function of time.

  The results are plotted on an X-Y recorder showing the particle size distribution in terms of "cumulative mass percent finer"

1

versus "equivalent spherical diameter." Reference 2 presents the theory and principles upon which the method is based.

# 2.3.3 Sample Size

25 g (if wet sieve analysis is performed, the particles passing through the 63  $\mu$ m sieve are retained for particle size analysis).

#### 2.3.4 Minimum Detectable Amount

The optimum range of this procedure is from 62  $\mu m$  down to an equivalent sperical diameter of 0.25  $\mu m$ . The range can be extended to 0.1  $\mu m$ , but this requires an additional five hours of analysis time.

# 2.4 Elutriate Test

#### 2.4.1 Applicable Documents

2.4.1.1 "Ecological Evaluation of Proposed Discharge of Dredged or Fill Material into Navigable Waters." pp. Al-A7, miscellaneous paper D-76-17, Office Chief of Engineers, U.S. Army, Washington, DC, May 1976.

#### 2.4.2 Summary of Method (TVA)

2.4.2.1 The elutriate test is a simplified simulation of the dredging and disposal process wherein predetermined amounts of dredging site water and sediment are mixed together to approximate a dredged material slurry. The elutriate is the supernatant resulting from the vigorous 30-min shaking of one part bottom sediment from the dredging site with four parts water (vol/vol) collected from the dredging site followed by a 1-hour settling time and appropriate centrifugation and 0.45 µ filtration.

#### 2.4.3 Sample Size

A 1000-g sediment sample is needed along with a 2-gallon representative water sample at the dredging site.

- 2.4.4 Minimum Detectable Amount
  Not applicable
- 3.0 Fish and Vertebrates
- 3.1 Applicable Documents
- 3.1.1 Pesticide Analytical Manual, Volume 1, Methods Which Detect

  Multiple Residues, Section 211.13f, U.S. Department of Health,

  Education, and Welfare, Food and Drug Administration, September

  1972.
- 3.1.2 "Interim Methods for the Sampling and Analysis of Priority

  Pollutants in Sediments and Fish Tissues," (1978), U.S.

  Environmental Protection Agency, EMSL, Cincinnati, OH 45263.
- 3.2 Summary of Method
- 3.2.1 SLI
- 3.2.1.1 The sample is homogenized, dried with Na<sub>2</sub>SO<sub>4</sub>, and extracted three times with petroleum ether using a high-speed blender.

  The combined petroleum ether extract is concentrated, transferred to a tared container and dried for lipid determination.

  Residue is dissolved in hexane and subjected to florisil cleanup when necessary. The extract is subsequently analyzed for DDT isomers and metabolites using agency-approved methods (1.1.1).
- 3.2.2 EPA
- 3.2.2.1 EPA used a sonic probe technique which involved two sonications of solvent and fish, for most of this study. The first few samples analyzed by EPA were also extracted by the FDA method which utilizes a high-speed blender. EPA used acetonitrile partitioning and Florisil chromatography in place of sulfuric acid cleanup.

- 3.3 Sample Size--25 g for each measurement; at least 50 g are usually collected for the quality control work and for a reserve.
- 3.4 Minimum Detectable Amount--0.01  $\mu g$  of each isomer or metabolite per g if a 25-g sample is used.

#### APPENDIX V

#### WORKTASK DESCRIPTIONS AND RESULTS FOR 7 TVA WORKTASKS

- TASK 1: DDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS
- TASK 2: FISH POPULATION ESTIMATES AND DDT CON-CENTRATIONS IN YOUNG-OF-YEAR FISHES FROM INDIAN CREEK AND HUNTSVILLE SPRING BRANCH EMBAYMENTS OF WHEELER RESERVOIR
- TASK 3: ASSESSMENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES
- TASK 4: ASSESSMENT OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY
- TASK 5: AQUATIC BIOTRANSPORT (EXCLUDING VERTEBRATES)
- TASK 6: VOLUME 1. HYDROLOGIC AND SEDIMENT DATA
- TASK 7: ASSESSMENT OF DDT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUNTERSVILLE RESERVOIRS (SPATIAL EXTENT OF CONTAMINATION)

# ERRATA SHEET FOR TASKS 1-7 FOR DDT STUDY TVA - SEPTEMBER 30, 1980

Document Description	on Page	Section	Change
Tasks 1-6	ii	Preface	"Envineering" to "Engineering"
1	2	3.42	"the composite dry ice blended" to "for most samples the frozen composite samples were wet blended"
6 Vol. 1	35 (3rd paragraph)	4.0	<pre>Insert after "dissolved" (without the addition of salt)</pre>
6 Vol. 1	35 (3rd paragraph)		Insert after "However", turbidity
7	2	3.1.2	Change "short-tailed shrew" to "shrew"
7	3	3.4.2	Insert after "Derivations in sample weights" (less than 50 grams)
7	4	4.1	Change the first sentence "A 10 gram aliquot" to read "When a 50 g sample was available (turtles and muskrats), a 25 g aliquot was removed."
7	4	4.1	After "except for shrews" insert "snakes and herrons" change "animal was utilized" to "muscle tissue was utilized"
7	4	4.2	Omit entire section
7	4	4.3	Change "additionally, approximately 10 percent" to "Due to the small sample sizes less than 10 percent"

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This Appendix contains seven individual reports on work tasks performed by TVA. The reports have been reproduced as received. Some reports have their own appendices and page number sequences begin anew with each report. The Table of Contents for each of the seven reports follows:

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ENGINEERING AND ENVIRONMENTAL STUDY
OF DDT CONTAMINATION OF HUNTSVILLE
SPRING BRANCH, INDIAN CREEK, AND
ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

## TASK 1

DDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

> Tennessee Valley Authority Office of Natural Resources

> > August 1980

#### PREFACE

This document was prepared in support of the Engineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

# CONTENTS

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TASK 1
WORKTASK DESCRIPTION

1;

#### TASK 1

WORKPLAN FOR DESCRIBING DDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

## 1.0 Purpose

To define the level of DDTR\* in important commercial and game fish species (human health implications) and to define the magnitude of DDTR bioconcentration and transfer in the fish community of Wheeler Reservoir.

## 2.0 Scope

Fish samples were collected from Wilson, Wheeler, and Guntersville Reservoirs, including eight tributaries of Wheeler Reservoir.

## 3.0 Procedures

- 3.1 Sample Locations See Appendix A.
- 3.2 Types of Samples
- 3.2.1 Fish species to be sampled 6 specimens of each species.

Commercial fish -	(all stations)
	TL (mm)
Channel catfish	
and/or	
Blue catfish	350-450
Smallmouth buffalo	500-600
Game fish - (all s	tations) TL (mm)
White bass	200-300
White crappie	250-350
Largemouth bass	250-350
Bluegill	100-200
_	

 $\frac{\textbf{Forage fish}}{\textbf{and Huntsville Spring Branch)}}. \ \, \textbf{325, 325, 345, 400, Indian Creek, and Huntsville Spring Branch)}.$ 

 $\begin{array}{ccc} & & \underline{TL \ (mm)} \\ \text{Gizzard shad} & & 50-150, \ 200-300 \end{array}$ 

<sup>\*</sup>DDTR = DDT isomers and metabolites

#### 3.3 Field Collection

3.3.1 Six specimens of the following species: channel catfish and/or blue catfish, smallmouth buffalo, white bass, white crappie, largemouth bass, bluegill and gizzard shad were collected from the designated stations (see Appendix A). Gill nets, hoop nets, electrofishing gear, and trotlines were used to make the collections. Some specimens were also collected from Indian Creek and Huntsville Spring Branch with rotenone (see Task 2). In addition, young-of-the-year specimens were collected in conjunction with fish population studies (Task 2) for DDTR analysis.

#### 3.4 Sample Handling

- 3.4.1 Each specimen collected was wrapped in paper and placed on ice in the field and then transferred to a chest freezer in the laboratory.

  Total length (mm) and weight (gm) was recorded and individual fish labeled and placed in the laboratory freezer. Caution was exercised to prevent contact with any plastic materials.
- 3.4.2 A summary of the fish sample collections is given in table 1.

  The samples designated by an asterisk in table 1 were handled and prepared by taking a portion of tissue from the dorsal musculature for DDTR analysis. On these samples, a 10-gram aliquot was removed from each portion of tissue and the composite dry ice blended. An aliquot was then analyzed for DDTR. On all remaining samples, a whole filet from each fish was removed, wrapped, and shipped to the laboratory. Each of the individual samples from one species was weighed and wrapped separately in aluminum foil and properly labeled. A separate polyethylene ziplock bag was used for all six samples from a given species (6 samples, 1 bag). The remaining body from each fish that had portions of flesh

Table 1. Summary of Fish Sample Collections and DDTR Analysis for Task 1

4

		Large-	See 11-					
		mouth	Bouth	Blue-	White	White		
Location		Bess	Buffalo	gill	Crappie	Bass	Gizzar	Gizzard Shad
Stream	Mile	₽DQT#	₽DDT#	DDT#	DDT#	DDT#	50-150	200-300
192	260	*	×	*	×	×	×	129
TRH	265	*	×	*	×	×	•	·
THE STATE OF THE S	270	7	•	*	*	: <b>×</b>	•	•
TEL	275	ه.	7	7	7	×	×	155
TET	280	, ~,	. ~	7	<b>×</b>	<b>×</b>	. •	·
191	285	*	*	<b>-</b> 40	<b>×</b>	در ا	•	•
E E	290	*	*	*	*	<b>×</b>	•	•
<b>11</b>	295	*	*	*	*	*	•	•
TE.	300	7	7	*	*	×	•	•
TRU	305	*	~	*	×	×	•	•
TPT.	310	~	~	7	7	×	•	
	315	•	~	<b>+</b> -	×	×	×	130
	320	7	7	~	×	×	•	•
Ē	325	>	>	•	×	×	×	132
	330	~	7	~	×	×	•	•
Ę	335	>	~	>	×	×	•	•
F	340	7	>	7	~	×	•	•
F	345	<b>+</b>	~	•	~	×	×	168
	350	>	×	~	7	~	•	•
Ę	375	~	>	~>	×	×	•	
	<b>6</b> 00	~	>	٠.	×	×	×	29
Elk River	S	*	*	k	~	~	•	•
Blk River	10	*	*	*	*	×	•	•
Elk River	15	*	*	*	*	*	•	•
Spring Creek	-	>	~	>	×	~	•	•
Limestone Creek	е	~	~	7	~	×	•	•
Flint Creek	'n	~	~	7	>	×	•	•
Cataco Creek	7	~	~	7	~	×	•	•
Indian Creek	7	-	>	<b>+</b> -	>	×	×	131
	4	×	×	×	×	×	×	×
Flint River	-	~	×	7	7	×	•	•
Paint Rock River	-	7	>	>	>	×	•	•

X = These samples could not be collected.

\* = These samples were partial filets blended with dry ice.

† = These composite samples were taken from samples used for the whole body analysis.

| = All samples collected.
- = Sample collection not planned.

removed was weighed, properly labeled, wrapped in aluminum foil, and retained in a freezer to provide capabilities for determining total DDT residue (head, flesh, viscera).

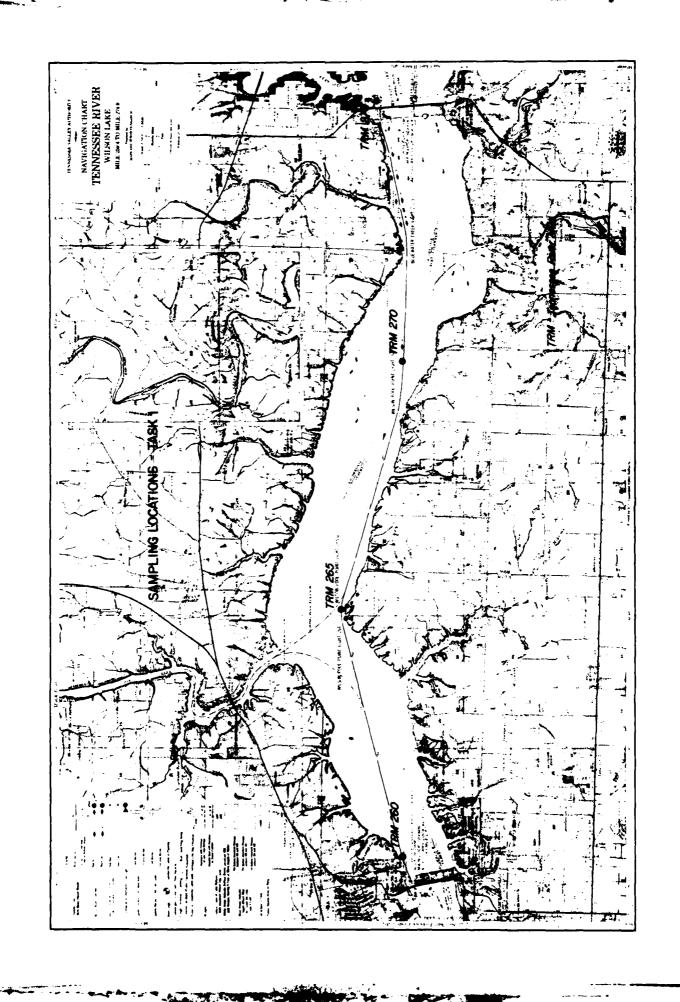
#### 3.5 Sample Analysis

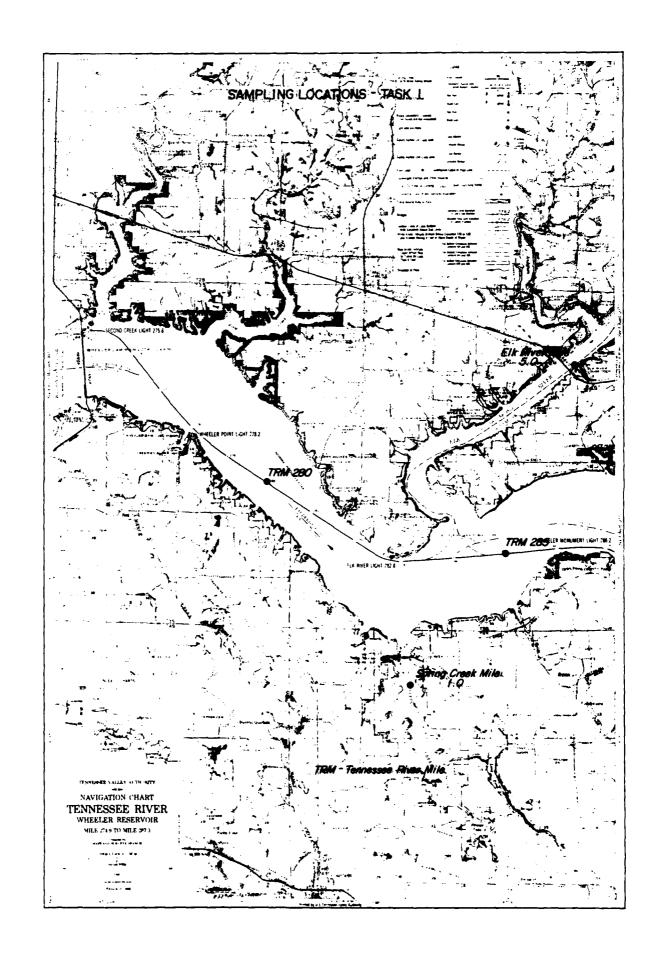
- 3.5.1 On those samples listed in table 1 which are <u>not</u> designated by an asterisk, the samples were prepared for analysis by first dicing each whole filet into small pieces and mixed well. A 10-gram aliquot was then removed from each fish and composited by blending. The composited samples were then analyzed for DDTR. If the total DDTR in the composite sample was greater than 2.0 µg/g, each of the six filets of that species were analyzed individually for all six forms of DDT residues. On composite samples which had been prepared by using only a partial filet, the individual samples were analyzed if the composite was greater than 1.0 µg/g.
- 3.5.2 Each of the six gizzard shad from a single station were blended separately. A composite sample was made by mixing aliquots from each of the six blended fish. The composite sample was analyzed for DDT residues. The remaining portion of each individually blended fish was retained for additional analyses as desired.
- 3.5.3 Whole body analyses was determined for six specimens of each of the following species: channel and/or blue catfish, largemouth bass, and bluegill, at the following sample locations: TRM 315, TRM 345, and 1CM2.

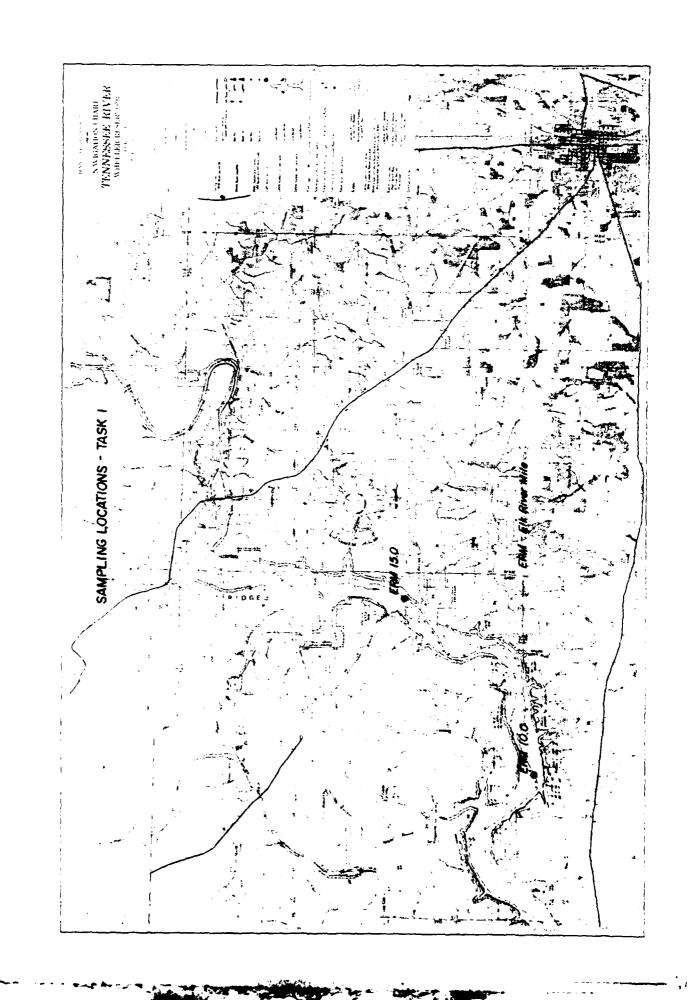
The remainder of each fish (after filet analysis) was used for the whole body analysis. All samples were analyzed individually for DDTR by previously specified procedures. The individual

- tilet analyses and the DDT analyses on the remainder of the whole body were arithmetically combined (proportionately to weight) to determine the total whole body value.
- 3.5.4 The DDT analysis was performed by an approved or acceptable procedure (see Quality Assurance document). Approximately 10 percent of all analyses were replicated. Additionally, approximately 10 percent of all samples to be analyzed were split and analyzed by a second laboratory.
- 3.6 Data Handling and Reporting
- 3.6.1 All data are summarized in tabular form and presented in Appendix B.
  This table includes: Sample identification number, location, date collected, species, length, weight, sex, and DDTR concentration.

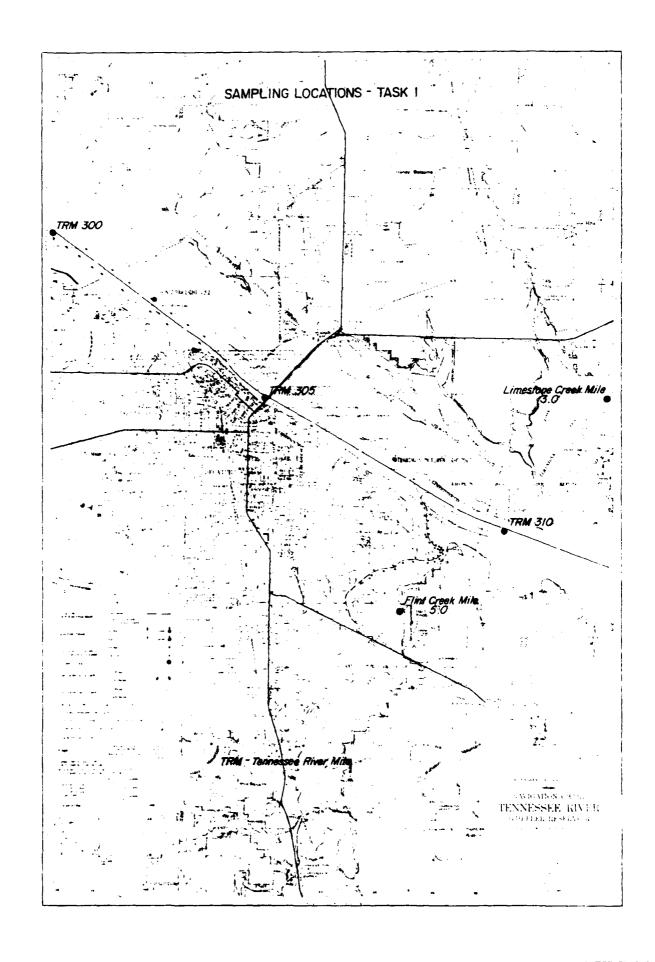
APPENDIX A
SAMPLE LOCATION MAPS

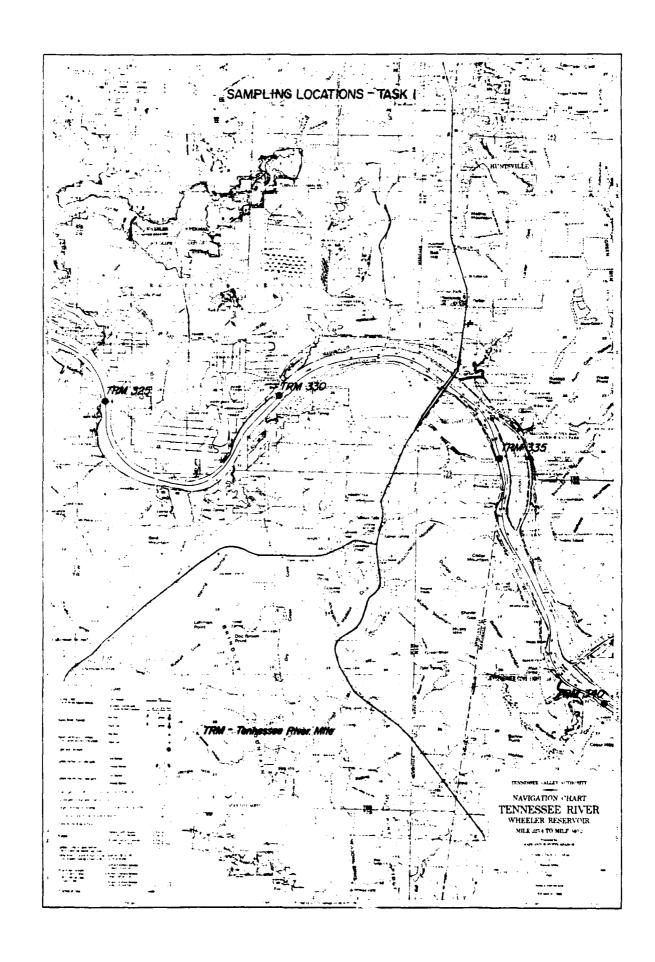


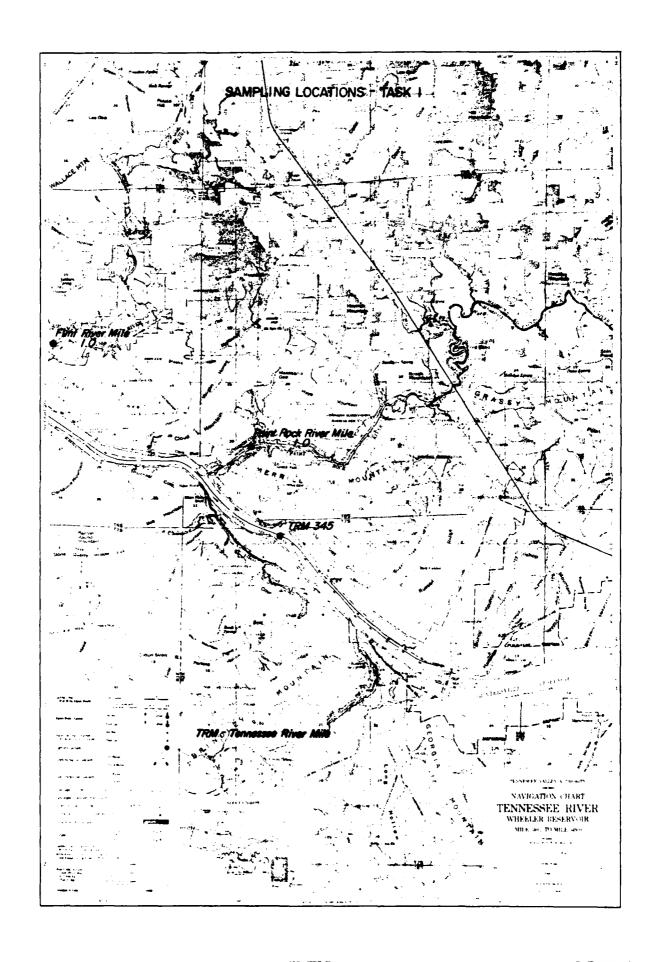


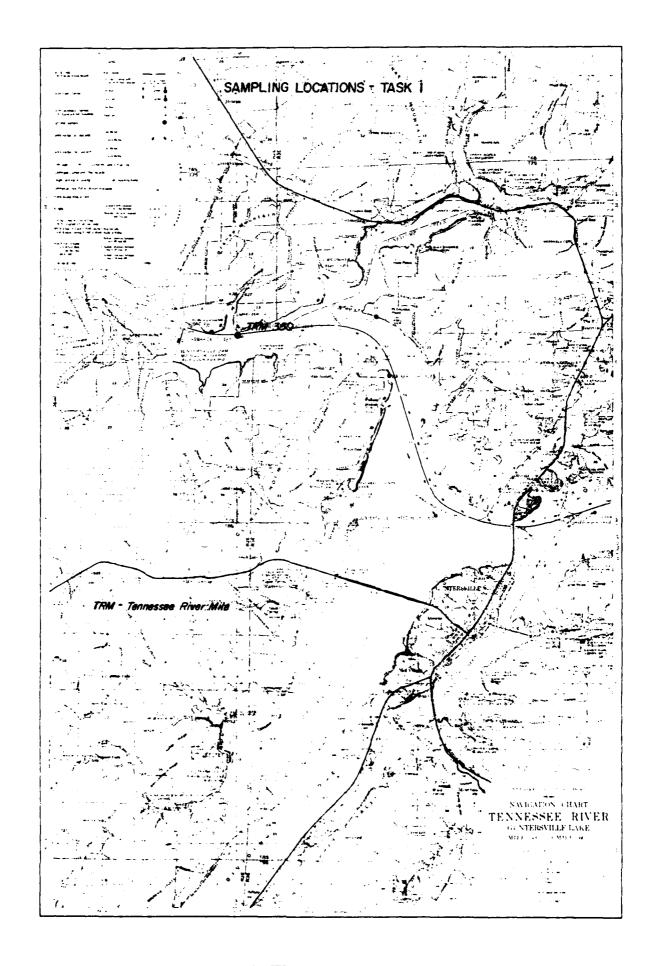


7 10 4

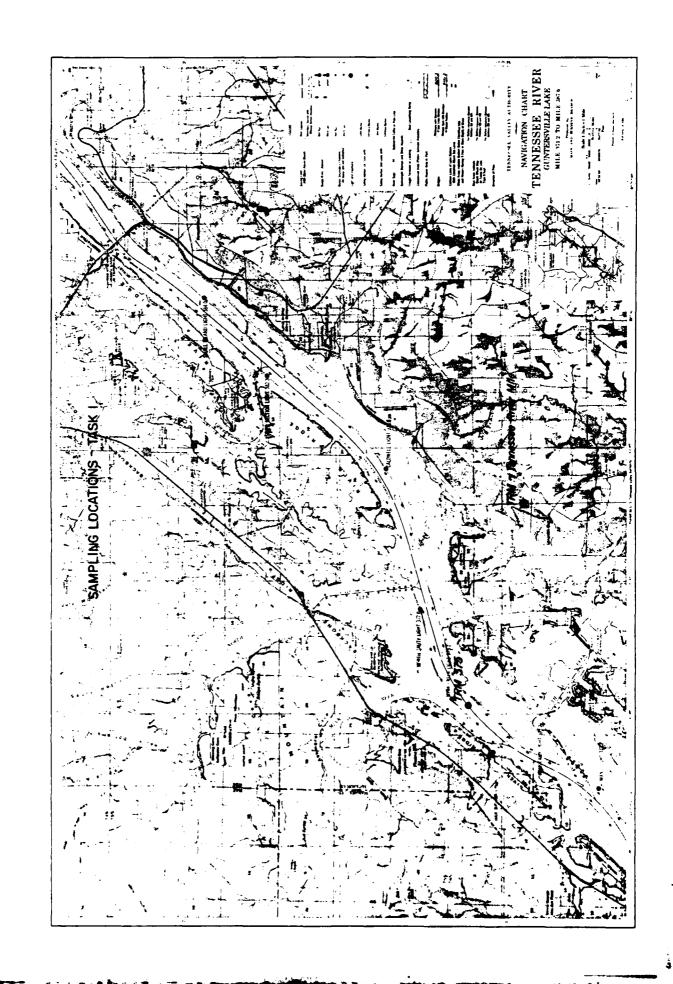


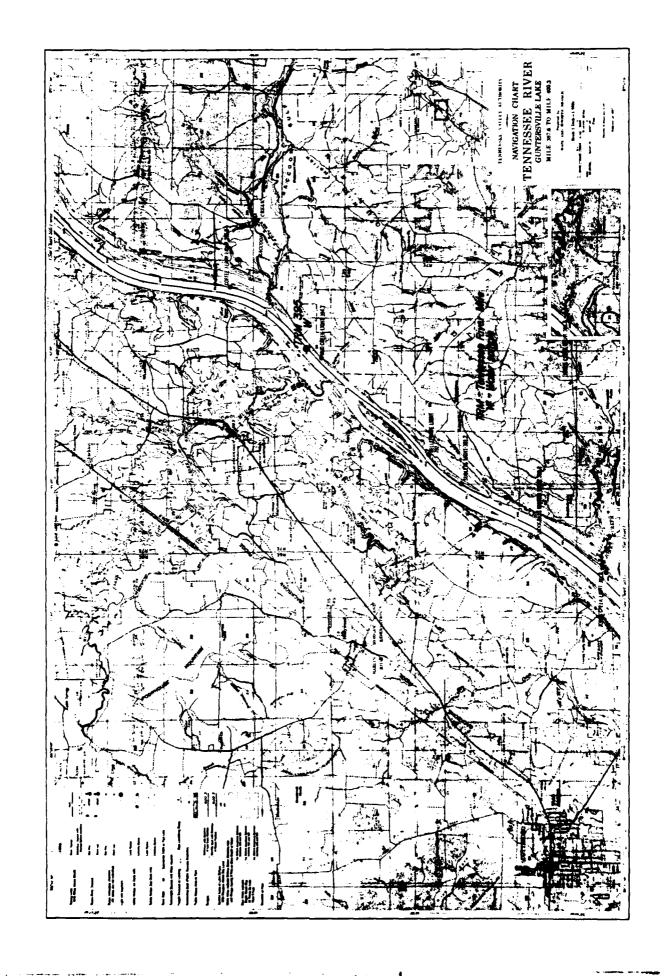


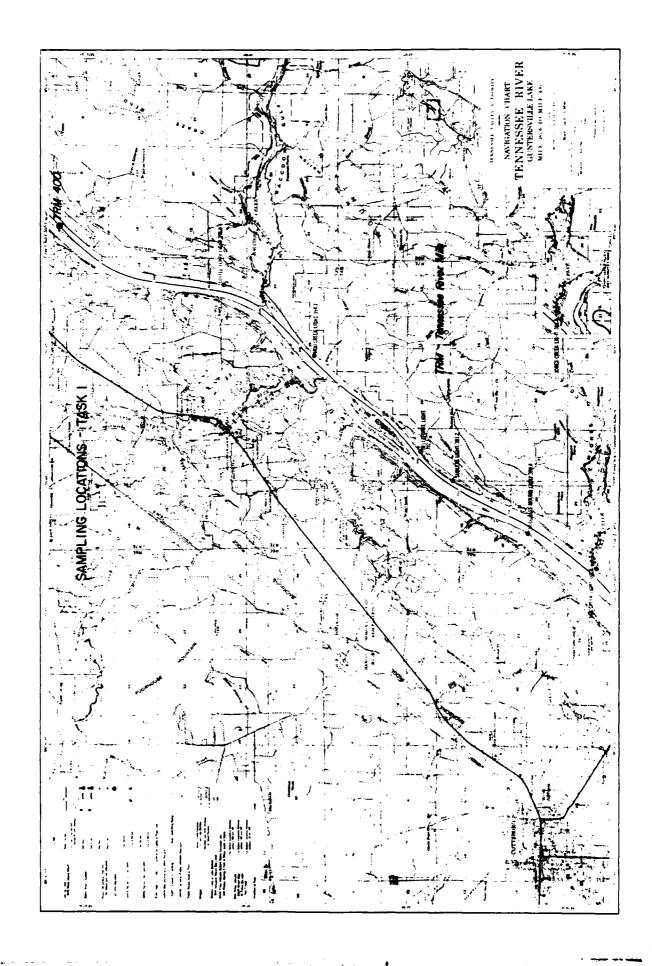




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APPENDIX B
RAW DATA TABULATIONS

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUMTSVILLE SPAING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- WHEELFR RESERVDIR, ALABAMA

TASK ! - 337 LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

REMARK		0 0 2 1	* 0 •
DO TR MAX (UG/G)		134.0 134.6 24.6 21.0 25.0 35.0 0.1 0.3	20000
F 15H, UG /G TOTAL - MIN (UG /G)		1340.0 1340.2 2140.0 22.3 22.3 24.0 0.3	17070
Z :		222-00 	00.23
MEASU DDE 0, P		10,500 1,139 1,139 1,399 3,46 0,001 0,001	0.00
OF DD1			0.79 0.26 0.11 0.23 1.02
DDD(UG/G)		8 0 0 0 1 1 1 5 0 0 1 1 1 5 0 0 1 1 1 5 0 0 1 1 1 5 0 0 1 1 1 1	0.03 0.03 0.03 0.06 0.06
CONCENTRATIONS UG/G)DDD(1		0.02 0.02 0.02 0.02 0.02 0.02	000000
CONCEN		0.02	0.00
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F1LET WT. (GM)		1180 170 170 170 170 170 170 170 170 170 17	888 804 804 800 800 800 800
- C - C - C - C - C - C - C - C - C - C		11111111111111111111111111111111111111	1530 880 460 1540 1650 1900
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01641		1-1116 1-1116 1-1116 1-1116 1-1116 1-109	1-0178 1-0176 1-0176 1-0176 1-0177
FID LA3			Sc1 Sc1 Sc1 Sc1 Sc1 Sc1
619		- $        -$	1711115
DATE	-CATACO CREEK	28AUG79 28AUG79	7AUG79 7AUG79 7AUG79 7AUG79 7AUG79 7AUG79
Alle	Y		*****

FASK 1 - DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS HOUTSVILLE SPRING BRANCH: INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- MHEELER RESERVOIR, ALABAMA

-- CONCENTRATIONS OF DDT MEASURED IN FISH UG/G-

1		) REMARK						_	ţ					_	_		-	-	-		-		*		-				-	•		_		_	_				_			.6 M.D.					_		•	• -	
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-TOTAL	ZIE	(9/90)	•	•	•	•	•	•	1.3	•	•	•	•	•	•	0	•	•	•	•	•	•	0	•	•	•	•	•	٠	•	•	•	•	•	• 6	•	•	•	•	•	•	0.0	•	•	•	•	•	• ]	•	• •	
	•		•	•	•	•	•	•	0.55	•	•	•	•	•	•	0.02	•	•	•	•	•	•	10.0	•	•	•	•	•	•	94.0	•	•	•	•	• 6	•	•	•	•	•	•	0 28	•	•	•	•	•	• 6	•	• •	
200	1) 300···	0,P P,P	•	•	•	•	•	•	0,31	•	•	•	•	•	•	0.01	•	•	•	•	•	•	0.01	•	•	•	•	•	•	0.0	•	•	•	•			•	•	•	•	•	0.12	•	•	•	•	•		21.0	• •	
5	Į	<u>م</u>	•		•	•	•	•	0.29	•	•	•	•	•	-	0.02 <	•	•	•	•	•	•	0.07 <	•	•	•	•	•	•	0.31	•	•	•	•	0-0-0	•	•	•	•	•	•	000	•	•	•	•	•		77.0		
	(9/90) (000	9.0	•	•	•	•	•	•	0,15	•	•	•	•	•	•	0.02 <	•		•	•	•	•	0.02 <	•	•	•	•	•	•	0.02	•	•	•	•	.0,0		•	•	•	•	•	0.02	•	•	•	•	•		•		
	ı	<b>a</b> .	•	•	•	•	•	•	0.02	•	•	•	•	•	•	0.02 <		•	•	•	•	•	0.02 <	•	•	•	•	•	•	0.02 <	•	•	•	•	.0.0	•		•	•	•	•	> 90.0	•	•	•	•	•	• [	•	• •	
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	S	2		. •	•	•	•	•	3.24	•		•	•	•	•	0.12 <	•	•	•	•	•	•	> 50.0	•	•	•	•	•	•	1.28 <	•	•	•	•	.0.0	•	•	•		•	•	3.20 <	•	•	•	•	•	. 5			
FILET		( <b>P</b> ( )	33.0	33.5	33.0	35 • 5	32.5	34.0	•	33.0	34.5	38.5	35 0	34.0	34.0	•	10.0	13.0	16.0	16.5	12.5	0.1	•	43°C	35.0	61.0	35.0	45.0	35.0	•	29.5	9	31.5	34.5		37.0	36.5	37.5	39.5	0.04	38.0	• ;	33	32.5	37.5	34.0	34.5	30.3	3.45	29.0	
	-	( GM)	3210	740	1450	1570	2430	2830	•	\$ \$	260	<b>610</b>	240	064	380	•	90	06	6	6	10	ဇွ	•	910	355	242	27%	362	<b>56</b> 0	•	220	017	215	180	707	1150	1200	970	1120	1300	1040	•	07/1	0667	2680	2450	2000	2004	340	230	
	LENGTH	Î	575	330	425	470	530	2	•	330	340	330	250	315	290	•	160	175	160	1 65	1 60	1 65	•	351	305	566	265	310	2	•	245			231		0 1 1	064	440	470	200	4 50	• !	•	2 4	950	525	650	219		2	
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		S)			S.*						r. x	E			¥.	L.M. BAS	<b>BLUEGILL</b>	BLUEG	9LUEGILL	91056	6LUE6	31CEG111	BLUEGILL	# 1 1 TE	MH176	MHITE	E LTE	ET 17E	AHITE	HITE	MHITE			4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	1 1 1	C. CATF1	<b>5</b>	<b>₹</b>	٠	•	<b>ა</b>	٠ د				• • •	* :		111	MH1TE	
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		. ▲ ١ €	740679	7AUG 79	7 AUG 74	\$ 19 X	7AUL75	7AUG 79	7A 66 73	7 AUG 73	7AUG7:	7AU674	741670	7AUG 79	7AUG 73	7AUG 79	7AUG 73	7AUG 79	7AUG 79	7AUS 79	7AUG 79	74067	7AUG 74	£ 4U6 79	64 UG 78	24UG79	PAUG 79	BAIG	8 AUG 79	EAUG 79	6AUG79	2000	E AUC 7	34 05 75	A A 15 70	EAUG 79	£ 2UG 79	BAUG 79	8 406 79	EAUG 70	EAUG 79	PAUG 75	2 30 4	PAUL	2 2 2 2	SAUG 70	EAUL 79	2 2 3 4 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2014	B A U.C. 79	
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TASK 1 - DDT LEVELS IN IMPURTANT FISH SPECIES THROUGHOUT WILSON, WHEELER,AND GUNTERSVILLE RESERVOIRS ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HOLDS ALING SPRING BRANCH, INDIAN GREEK, AND ADJACENT LANDS AND WATERS --- WHEELER RESERVOIR, ALABAMA

	REMARK				,	•						•	•						•						•						M.D.				N.S.	200	•						•	•		
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F 15H, UG /G	MIN (06/6)	•	•	•	• ;	0	•	•	•	•	•	• 6	•		•	•	•	•	0	•	•	•	•	• •	4.0	•	•	•	•	•	0.2	•	•	•	• •	• •	4.0	•	•	•	•	•	• 6		•	•
Z	1	•	•	•	•	10.0	•	•	•	•	•	. 6		. •	•	•	•	•	10.0 >	•	•	•	•	•	0.14	•	•	•	•	•	0.05	•	•	•	• •	• •	0.18	•	•	•	•	•	.0.0	•	• •	•
MEASURED	00E (UG/G)	•	•	•	•	0.01	•	•	•	•	•	• 6	•		•	•	•	•	10.0	•	•	•	•	• •	0.05	•	•	•	•	•	0.16	•	•	•	• •		0.05	•	•	•	•	•	6.		•	•
OF 001	16/61 - 9.9	•	•	•	•	20.0	•	•	•	•	•	0.0			•	•	•	•	0.01	•	•	•	•	•	0.11	•	•	•	•	•	0.02		•	•	• •		0.16	•	•	•	•	•	20.0	•	•	•
ATIONS	000 (UG/G)	•	•	•		> 20 0	•	•	•	•	•	200			•	•	•	•	0.0	•	•	•	•	• •	0.02	•	•	•	•	•	0.02	•	•	•		•	0.02	•	•	•	•	•	.0.0		•	•
CONCENTRATIONS	6/6) P.P	•	•	•	•	0°05 <	•	•	•	•	•	.0.0			•	•	•	•	0.02 <	•	•	•	•	• 1	0.03	•	•	•	•	•	0.02 <	•	•	•	• •	. (	0.02	•	•	•	•	•	.0.0		•	•
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	(E)	•	•	•	• ?	× 60°0	•	•	•	•	•	0.23 6			•	•	•	•	0.07 <	•	•	•	•	• •	1.03	•	•	•	•	•	0.52 <	•	•	•		•	0.54 <		•	•	•	•	0.02			•
F 11.6 T		26.5	30.0	21.5	26.0	• ;	3000	0000	33.0		24.0		20.0	21.5	30.0	19.0	23 •0	22.5	•	17.0	32.5	4.00		78.0	•	34.0	39.5	40.5	33.5	6,55	•	38.5	98	37.00		•	•	35.0	37.0	36.0	33.0	31.0	6.07	39.5	37.5	31.0
	7.K7 (6M)	100	110	6	110	•	530	2 6	250	200	250	7,	· C	120	150	001	110	110	•	001	006	0771	2011	2 6	•	1990	1450	3090	1300	9 6	•	210	014	0 4 6	•	•	•	3	310	200	240	130	9	570	9	340
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	SPECIES	WHITE CRAPPIE	CRAPP	CRA PP	WHITE CRAPPIE	TE CRAPP	C.M. BASS	Code DASS	L.M. BASS	2000	, 1	L.M. BASS	=	LUEGI	BLUEGILL	RLUEGILL	BLUEG1LL	BLUEGILL	LUEGILL	٠	•	•	•	C. CATFISH	ن •	Ĭ	S.M. BUFFALO	•	•	A.M. BUEFALD	S.M. BUFFALO	WHITE BASS	WHITE BASS	WHITE BASS	WHITE BASS	MAITE BASS	WHITE BASS	CRAPP	WHITE CRAPPIE	CRAPP	CRAPP		MMITE CRAPPIE	BASS	.H. BA	A.S
	LABIC					1-0.3						1-0.4	; ;						1-025						1-011						1-015						1-013						1-01	1		
	LA9					7						115	;						211						SLI	 					118						SLI						213			
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	DATE	BAUG 79	8 A U.C 79	8AUG 79	8AUG 79		04 C6 73	2000		70000	2000	84.67.2	8 AUG 79	8A UG 79	8AUG79	8 AUG 79	BAUG 79	8AUG 79	8AUG 79	940679		2 2 2 2	7400	941579	9AUG 79	9AUG 79	9AUG 73	9AUG 79	9 A US 72	940679	9AUG 79	9 AUG 79	9 AUG 79	9 4 C 7 2	940673	9AUG79	9AUG 79	9AUC 79	SAUG 73	9 AUG 79	9AC 79	9AUG79	\$ 12 M	9 AUG 79	9AUG 79	940679
	#1ce	10.0	10.0	10.0	9								10.0	10.01	10.0	0.0	10.0	10.0	0.01	25.0	000	0 4	2 4	15.0	15.0	15.0	15.0	25.0	200	12.0	15.0	15.0	15.0	2 6	15.00	15.0	25.00	15.0	15.0	15.0	95	12.0	15.0	15.0	15.0	15.0

THOUSAILE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- AMEELER RESERVOIR, ALABAMA

TASK : - 307 LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT MILSON, WHEELER, AND GUNTERS VILLE RESERVOINS

		REMARK			•	•							•											•																								
,	MAX	106/6)	•	•	• ;	•	•	•	•	•	•	•	•0		•	•	•	•	•	•	0.2	4.3	* 0		0.7	1901	0 e	•	•	•	• •	•	•	0.3	•	•	•	•	•	•	7.0	•	•	•	•	•	• (	7*0
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1	/511/ 100	0	•	•	• 6	> 70.0	•	•	•	•	•		0.02 <			•	•	•	•	•		0.02	0.05	0.03	0.03	0.12	200		•	•	• •	•	•	0.02 <	•	•	•		•	•	0.02 <	•	•	•	•	•	• 3	> 20.0
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;	11.5	( CM)	30.0	37.0	36.0	• 40	2 4 4 6		0 0	7.27	2000	24.0	•		33.0	51.0	24.0	0.0	47.0	0.67	•	53.0	0.79	0.64	114.0	0 0				0 0	140.0	163.0	81.0	•	37.5	35.00	38.0	31.5	36.0	30.0		21.0	<b>50.</b> 2	12.0	27.5		) • • • • • • • • • • • • • • • • • • •	•
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	M L SWS 1	( W	265	355	300	• 5				175	8	165	•		320	282	315	335	562	315	•	410	365	340	8	074	9	• 5					450		220							-4	165	175	9 9	170	165	•
		SPEC 1E S	L.M. BASS	L.M. BASS	Lowe BASS	C.T. DASS			פר סבייור	BLUEGICL	BLUEGILL	9LVkG1 LL	BLUEGILL			L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	C. CATFISH	C. CATFISH	C. CATFISH	•	C. CATFISH	•		S.M. BILESALO	S.M. RUFFALO	S.M. BUFFALO	S.M. HUFFALO	S.M. BUFFALO	S.M. BUFFALO	WHITE CRAPPIE	8105611	stuegiti	61.UEG I LL	BLUEGILL	31UEG111	SLUEGILL	פרטנטזרר						
		LABIU			4	610-1							1-016								1-00-1	1-0604	1-08CB	1-0600	00 20 -1	1-08 OF		Š						1-081							1-15 1						4 - 1 - 4	051-1
		647				1-5							St.1	!							SLI	775	S L :	SLI	110	֓֞֞֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֡֓֓֓֓֓֡֓֓֡֓	110	,						21.1							21.1							7
		01 4	4.0	ر ا	ķ	5 7	ָר פּר	7,	٠	4	6-5	9-3	Š	¥.	7	<b>2-</b> 5	5-3	4	5-5							<u>.</u>			, ,	¥ ~	1	4	3-6		1-4	4-2	4-3	4-4	4-5			1-9	6-2	£-	Ť		9	
		CATE	940679	9A:J679	7 ST 5	445	3	740617	440674	SAULE 19	9AUG79	9AUG 79	9AUG 79	-FLINT CREE	1640679	16AUG 70	16 AUG 79	1610678	1.0 AUG 79	164 UG 79	164 JG 75	2 PAUG 79	264 UG 79	ZBAUC 79	20 V 30 V	2 EAUS 79	SALC 70	28 ALE 79	K 3148	02 9 W W	2 8 AUG 79	EAUG 79	ZEAUG 79	28 AUG 79	ZEAUG 79	28 AUC 79	264UG79	26AUG 79	26AUG 79	26AU674	2 30 Ag 2	28 A UC 79	2 30 V6 3	SAUC 79	284 06 79	-00 0	28 V. C.	2 30 40 7
		41.E	15.0	15.0	٥ <u>١</u> ٢	200	) <u>.</u>		0.61	0.01	15.0	15.0	15.0	14-	2.0				0	٠ •	<b>°</b>	0	٠	٠	و		9 0	2			0							o		•	0			0				0

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS -- WHEELER RESERVOIR, ALABAMA

	REMARK										;	<b>X•</b> X•	N.S.	N. S.	N.S.	N. N.												N. S.																
100	CUG/G		0.3	0.0	1.2	0.3	2°¢	100	0.5	•	•	•	•	•	•	•	•	•	•	•	•	• (	0.1	•	• '	•	• •	•	1.0	•	•	•	•	•	•	0.1		3.86	¥.	39.7	*	41.7	9-1-0	7.001
F 154, U6/6	MIN (0/9)		0.3	•	1.2	F. 0	2.6	0.1	0.5	•	•	•	•	•	•	•	•	•	•	•	•	• ;	1.0	•	• 1	• •		•	0.0	•	•	•	•	•	•	0.0		178.8	*	39.6	7	41.7		100.
Z	UG/6)		0.11	• · · ·	0.53	90.0	0.59	0.03	0.17	•	•	•	•	•	•	•	•	•	•	•	•	•	000	•	•	•		•	0.02	•	•	•	•	•	•	0.05		40.30	14.10	10.80	13.70	46.0	10.40	23.10
MEASURED	00E (UG/G		0.04	0.0	0.19	90.0	0.22	0.01	0.07	•	•	•	•	•	•	•	•	•	•	•	•		0.01	•	•	•	• •	•	0.0	•	•	•	•	•	•	< 0.01		13.60	4.31	2.80	4.62	3.05	2.81	1.34
OF DD1	U6/6)		0.08	0.07	0	× 0.02	_	0°0 >	0.15	•	•	•	•	•	•	•	•	•	•	•	•	•	40.0	•	•	•	• •	•	0.02	•	•	•	•	•	•	< 0.02		*	<b>~</b>	18.20	ç	٩	02.02	•
CONCENT RATIONS	900 000		< 0.02			20.0	0.43		0.03	•	•	•	•	•	•	•	•	•	•	•	•		0.01	•	•	•	• •	•	< 0.02	•	•	•	•	•	•	< 0.02		36.00	10.10	7.63	11.30	0.53	2	14.5
CONCENT	UG/G)		0 00	0.05	0.14	40.0	0	20°0 >	0.0	•	•	•	•	•	•	•	•	•	•	•	•	• (	0.0	•	•	•	• •	٠.	< 0.02	•	•	•	•	•	•	< 0.02		4.58	0.71	< 0.10	990	0.97	0.32	1.00
1	001(UG/G)		0.07	8000	0.19	0.11	0.26	0.03	0.03	•	•	•	•	•	•	•	•	•	•	•	•	•	0.0	•	•	•	• •	۱ (	< 0.02	•	•	•	•	•	•	< 0.02		1.94	69.0	0.14	0.72	0.57	24.0	1.20
	LIPIOS (\$)			유	~	~	~	€ .		•	•	•	•	•	•	•	•	•	•	•	•	• (	0.0	•	•	•	• •	, ,	0.05	•	•	•	•	•	•	0.38		2.15	1.52	1.02	1.52	0.69	1.26	2 - 1 5
6 1, CT	69.		70.0	75.0	0.0	25.0	000	110.0	•	300	380.0	•	•	•	•	•	28.0	2.00	35.0	98	36.7	34.0	•	000	0 0	32	19.0	•	•	26.4	21.6	11.0	20.0	31.0	16.0	•		•	•	•	•	•	•	•
	1.H.		470	8	265	9	410	655	•	2870	3 700	•	•	•	•	•	\$	455	140	2	180	115	•	011	3 5		2 6	} •	• •	96	8	30	55	8	Š	•		100	130	120	120	120	110	•
	LENGTH (MM)				330					295		•	•	•	•						252			107	2 5	3 6	180	•	•	163	156	125	1	9	3	•		98	255	240	230	235	235	•
	SPECIES		•	· CATE	· CATE	. CATE	. CATE	CATE	1	2	2	2	3	9	2	3	ū	3	WHITE CRAPPIE	ັ	WHITE CRAPPIE	٠	5	3	7 Y D	7 4 4	L.M. BASS	AAA	BAS	יונו	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEG TLL	BLUEGILL		GIZZARD	GIZZARD	GIZZARD SHAD	GIZZARD	GIZZARO	GIZZARD SHAD	GIZZANU SHAD
	LA91.		1-05 ₩	1-0548	1-0540	1-0540	1-05 4€	9	1-054													4	1-159						1-055							1-134		1-13 1A	1-1318	1-13 IC	1-1310	1-1316	1-1315	3
	Ŝ	1	<b>SL1</b>	Sr.I	SLI	211	SLI	SLI	SLI														SLI						SLI							<b>S</b> L 1		118	SLI	SL1	SLI	SLI	SLI	211
	F 10	آر 1	1-1	~	-1	-	~	-	U (	7-2	N (	~ (		~	9	J	4	4	4-3		-		_	N 1	77	, 4			ں ۱			6-3	10	•	•	J	CREEK .	7-1	~	•	•	- 1		J
	DA TE	FLINT RIVER	25SEP 79	2 55 EP 79	w.,	25 SEP 79	25SEP 79	•	255EP 79	255EP 79	255EP 79	255EP 79	255EP 79	2 55EP 79	255EP 79	25SEP 79	255EP79	25SEP79	255EP79	2 \$5 60 79	25 SEP 79	255EP 79	235EP79	255EF 73	0443567	2456979	25 SEP 79	255EP79	25 SEP 79	235tP79	25SEP79	25 SEP 79	255EP79	25SEP79	255EP 79	25SEP79	INDIAN CR	2A UG 79	2AUG 79	2AU679	2AUG 79	2AUG 79	ZAUGY9	ZAUE
	HILE	F			0.4	0.	0.1	0.4	0.1	0.4	9		•	?	9	9	0	0.	0	0	8		9	3 0		,	9			1.0					1.0	1.0	N	2 •0	0° 2	7.0	2.0	2.0	2.0	7.0

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUMSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- WHEELER RESERVOIR, ALABAMA TASK 1 - DUT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

		REMARK			2	•		M.D.																									Z.D.												
	DOTR	(9/90)	455.9	627.4	13.0	617.1	25.4	185.5	9. 9	12.6	2.2	4	16.7	16.2	•	•	•	•	•	•	n M	•	•	•	•	•	• •	2-1	5.2	**	9.9	2.1	7.7 4.2			•	•	•	•	•	•	e .	- 6		0.5
FISH, UG/G	TOTAL	(9/90)	455.9	627.4	12.5	617.1	×.	185.5	9	12.6	2.1	0,4	1.67	16.2	•	•	•	•	•	•	3.5	•	•	•	•	•							2.3			•	•	•	•	•	•	4.3	2 v		0
Z		3 4	104	157	*Z**	156	5.87	47.10	1 \$8	2.36	640	æ.	0.40	3.28		•	•	•	•	•	680	•	•	•	•	•	04.0	94.0	1.23	1.06	1.18	0	0.96			•	•	•	•	•	•	1.82	2 5	0.17	0.28
_	4	0,0	31.60	52.50	1.32	50.20	1.96	13,50	0.63	1.23	0.18	4.19	7.07	1.20	•	•	•	•	•	•	0.25	•	•	•	•	•	•1•0	0.18	0.52	0.36	0.58	0.18	0.19			•	•	•	•	•	•	0 0 0		0.02	0.02
CF DDT	-	4.4	226	28.8	0.00 0.00	0000	10.40	90 .50	2.94	5.59	1.02	20.10	08-21	4 4 60	•	•	•	•	•	•	1.65	•	•	•	•	•	٠,	7	-		٠,	~ '	1.29			•	•	•	•	•	•	۲.		9	8
CONCENTRATIONS	Š	0.0	69.00	110	2.63	106	3.80	29.10	19.1	3.26	0.49	10.30	200	00	•	•	•	•	•	•	0.61	•	•	•	•	•	. 2	0.29	0.68	0.57	<b></b>	0.34	0.53			•	•	•	•	•	•	0.0	700	0	9
CONCENT	, , , , , ,	964	13.00	11.20	91.0	8.67	1.70	2.71	0.05	0 0 55	< 0.02	0 .25	91.0	0.13	•	•	•	•	•	•	0.0	•	•	•	•	•	.0.0	< 0.02	< 0.02	< 0.02	< 0.02	× 0.02	20°0 >			•	•	•	•	•	•	7			9
1		4.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	_	8.69							V					•	•	•	•	•	0.05	•	•	•	•	•	C	0	< 0.02	0	0.05	20°0 >	20°0 0°0 0°0			•	•	•	•	•		0	70.0 >	0	0
	-			10.50												•	•	•	•	•	0.22		•	•	•	•		. 0	0	0		0	0.26			•	•	•	•	•			-		
1		. <u>.</u> .	m			_	•																				•						18.0			35.3					m	:	7 -		-
	,	( ) ( ) ( )	1270	1030	370	975	300	•	710	730	9	740	200	•	2,2	230	240	320	110	260	•	240	210	2 6		2 2	•	110	110	9	130	<b>&amp;</b> i	٤.			320	900	200	200	333		•	٦-	-	1770
		(MM)		585									200		280							250	0 2	512	200	233	S (	170	165	155	165	3	200			315	450	395	8	320	3	• :	4 4	430	460
		SPECIES	. CATFIS	C. CATFISH	CATFIS	CAIL 13	CATFIS	CATFIS	BUFF	BUFF	BUFF	BUF	Ser BUFFALC	30.00	E CRA	2	3	3	3	WHITE CRAPPIE	3	L.M. BASS	n	n	2240	n a		LUEGIL	BLUEGILL	61VEG111	LUEG ]	LUEGI	BLUEGILL BLUEGILL			. CATFI	. CATFI	. CATF1	. CATFI	CATFI	CATEI	7 F 1S	1	B UFF	E .
		LARIU	1-08 9A	1-0698	1-05-90	10001	1-08 45	1-099					2011	900							1-142						1-17	1-14.34	1-1438	1-1420	1-1430	1-1435	1-147	i							,		E 01 -	-10 %	1-1070
		LAR			SCI															,	21.						51.3	SLI	SLI	SLI	217	SLI	S. I. S												SLI
		6 10	_		-	• ~	-	Û	4	N	N	٠,		ں ب	1	4	3	.7	4		. ب	^ '	٠,	<u>۱</u>		N	V	•	•	0	•	•	15	ď	!	-	~	-	~		~	، ب	7 7	~	~
		DATE	a.	28AUG 79	B) 0		æ		80	Œ	28AUG 79		28415.70	28AUG79	28AUG 79	28AU679	40	<b>S</b>	å	3) (E	<b>80</b> (	2840679	Z SAUC 19	2000	20000	2040679	28 ALK, 79	2BAUG 79	28 AUG 79	28AUG 79	2 E A UG 79	<b>مو</b>	28AU679	AFCTONE		28AUG 79	28AUG79	28 AUG 79	26A UG 79	28 AUG 79	Z SAUG 79	2.8 AUG 79	28A1579	28AUG 79	28AUG 79
		MILE	2°C	7.0	000	200	0	2.0	2.0	2.0	2.0	0, 0	2 6	2.0	6.0	2.0	2°C	2.0	2.0	Q (	2.0	0.0	2 (	2 0	9 0	9 6	0.7	2.0	2.0	2 •0	2 · C	0.	0 ° 7	3 BT	i	0	0	3	Q	0	0	o d	) C		0

TASK 1 - DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTANINATION HUNTSVILLE SPRING BRANCH, INDIAN GREEK, AND ADJACENT LANDS AND MATERS -- MMEELER PESERVOIR, ALABAWA

		REMARK	0	)								# D.							_								
SH, UG /G	MAX	19/901	6.0		5.4	•	• ,	, ,	•	•	• •	0.2	;	• •	• •	• •	•	• •	0.2		• •	• •		•	•	•	0.2
CONCENTRATIONS OF DOT MEASURED IN FISH, UG/C		3/93	6.0	0-2	8		• (	•	• ,	•	• •		,	•		• •			0		, ,	•	•	•	•	•	0.1
ED IN F	00F (UG/G)	٩	0.38	0-12	1.20		• •	• •	•	•	• ,	40-0	} •	• •	• •	, (	, ,		990		•	, ,	•	•	•	•	0.01
MEASUR		<u>د</u> 0	0.05	0.03	0.34	•	, ,		• •	•		0.0	•	. •		• •	•		0.03	•			,	•	•	•	3.02 < 0.01
OF DDT	(9/90) 000	٥.	0.20	60.0	2 . 35	•	, (			• •		0.05	•	•	• •		•	•	> 60.0	•	•		, ,	•	•	•	2000
RATIONS		0	0.03	20-0	1.24		•	. •		, ,		< 0.02	•	•	•	•	•	•	< 0.02		•	•		•	•	•	20.0
CONCENT	00/901 tag	٥	.82 0.02 0.04 0	2000	0.22	•		. •	. (	, ,		0.04 < 0.02 < 0.02 < 0.02	· •		•		•	•	0.06 < 0.02 < 0.02	•	•	•	٠,	•	•	•	0.13 < 0.02 < 0.02 < 0.02
Ĭ		<b>a</b> 0	0.02	0.02	0.02	•	٠,	, ,	•	• •		0.02		•	. •	•	•	•	0.02	•	•	•	٠,	•	•	•	0.02
	LIPIOS	E	0.82	0.71	1.12	•	•	•	•	•	•	0.0	•	•	•	•	•	•	0.06	•	•	•	•	•	•	•	0.13 <
F 11 F T	Ē	25	147.0	230.0	•	34.0	35.5	38.0	33.0	31.0	31.5	•	68.0	41.0	41.0	32.0	0.94	132.0	•	8.6	10.0	12.6	12.0		K • 1 1	14.5	•
	TW-T	3	1250	2000	•	370	300	550	260	210	230	•	490	260	260	210	460	1310	•	9	20	3	9	\$	8 3	2	•
	LENGTH T.HT		044			285					250			275	275	250	305	410	•	125	135	160	145	4.0		102	•
		SPECIES	S.M. BUFFALO	S. W. BUFFALO	S.M. BUFFALD	WHITE CRAPPIE	L.M. BASS	BLUEG ILL	BLUEGILL	<b>BLUEG1 LL</b>	BLUEGICE	B1116C211		BLUEGILL	<b>bluegil</b> l												
		LAS10	1-1075	1-10 F	1-107							1-156							1-106							,	1-147
	•	. 10 LA:	175					_				SLI							SLI			_					SLI
		3		9-2-6	\$ 00 00 00 00 00 00 00 00 00 00 00 00 00	1-5 6	2-4 6		-	9-4-6				_	9 5-3			9 54	9 CO		9 6-2			4-4			<b>8</b>
	;	2	-					28AUG 79		28AUG 79	26 AUG 79	28 AUG 79		28AUG 73		26AUG 79			28 AUC 79			28AUG 75	28AUG 79	PRAIS X	20.00	3407	28AUG 79
	1	1	3.0	3.0	3.0	3.0	3.0	ۍ ۳	3.0	3.0				3.0	3.0	3.0	9.0	3.0	3.0	3.0	3.0	3.0	3.0				3 M

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•••	• •	• 7 •	• • •	• • •	· · ·	2.6
• • •	• •	· ? ·			•••	9
•••	• •	60.0			•••	0.0
• • •	• • •	8.03	•••		• • •	0.01
• • •	• • •	.0.0	•••		• • •	5 < 0.02 < 0.02 < 0.02 < 0.02 < 0.01 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 < 0.000 <
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•••	• • •	× 0°05 ×	• • •	0.03	•••	0.02
• • •	• • •	0.05	•••		• • •	0.05 <
33.0 28.0 36.0	43 80 80 60 60	7.5	34.5	29.0	25 0 50 0 33 0	20.0 35.0 46.0 150.0
198	288 224 284	.2	121 108	113 88	83 172 100	62 120 187 1110
254 201 219	273 248 285	. 3	271	122	189 225 193	174 215 235 454
WHITE CRAPPIE WHITE CRAPPIE	WHITE CRAPPIE WHITE CRAPPIE	WHITE CRAPPIE BLUEGILL	BLUEGILL BLUEGILL BLUEGILL	BLUEGILL Bluegill Bluegill	L.M. BASS L.M. BASS L.M. BASS	
		1-069		1-070		1-091 1-052A
		175		<b>SL1</b>		\$4.1 \$4.1
177	179	57	777	<b>795</b>		
• • •				•••	6SEP 79 6SEP 79 6SEP 79	65EP79 65EP79 65EP79 65EP79 265EP79
0000		000		000		20000

-----PAINT ROCK RIVER -----

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HOLDS ALL SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- WHEELER RESERVOIR, ALABAMA

TASK 1 - DOT LEVELS IN IMPORTANT FISH SPECIFS THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

		REMARK		0																																													
		(9/90)	9.0	0	1.5	0.0	0.2	0.5	•	•	•	•	, (	• •	0		•	•	• •	•	• •	•	2.0	•	•	•	•	•	•	1.1	•	•	•	• ;	1.6	•	•	•	•	•	•		•	•	•	•	•	•	0.1
FISH, UG A	NIE	(9/90)	0.5	0.0	1.5	4.0	0.2	0.2	•	•	•	•	• •	•	•••			, ,	• •		• '	• •	• 5	•	•	•	•	٠	•	1.1	•	•	•	• ]	9:1	•	•	•	•	•	•	0	•	•	•	•	•	•	0.0
Z,	( OC /C)	0	0.18	0 = 24	0.45	0.14	Q.	o	•	•	•	•		•	0.18		•	• (	• •	•	• '	•	0.86		•	•	•	•	•	0.53	•	•	•	• (	0.12	•	٠	•	•	•	•	0.0	•	•	•	•	•	•	•0•0
MEA SURED	006	0 0	0.10	0.20	0.47	90.0	0.0	0,03	•	•	•	•	• •	•	0.03		•	• 1	• •	•	•	•	0.32	;	•		•	•	•	0.10	•	•	•	•	9. 16	•	•	•	•	•	•	0.0	•	•	•	•	•	•	10°0 >
OF 00T	- (9/3n	4	0.10	0	0	< 0.02	0	0.05	•	•	•	•		•	0.00		•	, ,	• •	•	•	•	0.57	•		•	•	•	•	0.30	•	•	•	• (	0.40	•	•	•	•	•	•	0.0	•	•	•	•	•	•	< 0.02 ×
RATIONS	000	d 0 0		0.02	70°0		200		•	•	•	•	• •	•	0.02		•	•	•	•	•	•	0.05	•	. •	•	•	•	•	0.10	•	•	•	•	0.11	•	•	•	•	•	•	10.0 >	•	•	•	•	•	•	< 0.02 ×
CONCENTRATIONS	(9/9n	4	0.05	0.10	91.0	40.0	0.03	0.03	•	•	•	•	• •	•	0.08		•	•	• •	•	•	•	0.14	•	•	•	•	•	•	900	•	•	•	• ;	0.11	•	•	•	•	•		< 0.02	•	•	•	•	•	•	< 0.02
1	001 (ug/g)		0.10	0.14	0.42	0.18	0.05	90.0	•	•	•	•	• •		0.02		•	•	• ,	•	• •	•	< 0.02	•	•	•	•	•	•	0.04	•	•	•	•	80.0	•	•	•	•	•	٠	< 0.02	•	•	•	•	•		< 0.02
		3		"	=	~		~	•	•	•	•	, ,	•	0.43		•		•	•	• •	•	2.74		•	•	•	•	•	2.86	•	•	•	•	1.96	•	•	•	•	•	•	0.06	•	•	•	•	•	•	0.15
£ 1 ; c 1	, T	3	135.0						185.0								9	118.0	71.0		0 0	4	•	6					106.0	•	43.0	26.0	35.0	0	• (	0	31.0	36.5	23.0	41.0	53.0	•	26.5	16.0	19.5	22.0	18.5	15.0	•
	-	3	1000	1150	1650	1330	1300	•	1725	1225	2185	1550	2 4 2 0	1420	•		670	9	5.35	1 6	200	4		1000	1 290	1310	1290	1 500	1445	•	370	100	260	250	• ;	017	201	150	390	300	320	•	130	9	90	06	06	2	•
	LENGTH	Î.	450						488				455				390	C 4	3	967	4 4	0	`	3.9			457				300					\$22	047	522	300	280	295	•	3	165	9	170	170	167	•
		SPECIES	C. CATFISH	. CATF	. CATE	CATF	CATE	CATE	en. bu	H. BUF	 90		1		S.M. BUFFALO		C. CATFISH	CATEICH	CATE		7111	TATE!	C. CATFISH	3	2	3	3	90,0	ğ	90,		2	20 3	5	3	L.H. BASS	0 A V	BAS	L.W. BASS	BAS	L.M. BASS	SAS	BLUEGILL	8LUEG111	BLUEGILL	LUEGI	10401	BLUEGICL	LUEGI
		LA 81 9	1-05 2b	-05	9	1-05 2E	-02	ငှိ							1-053								1-096	•						1-15					1 -1-1							1-144							1-14:
		LAR	SLI	SLI	SL 1	SLI	SLI S	SLI							175								SLI							25.1					7.7							S.L.1							SL1
		F 10	1-2	-	_			v		~	ςı	~		• ^	<i>,</i> 0		7	-	-	• -	• ~	-	ں •				1.4	~	N	ں	m	M	m i					o,	S.			U			ø	٥	•		U
		DATE	265EP 79	265EP70	5 6 2 Eb 16	265EP 79	265cP79	265EP79	26SEP 79	265 EP 79	26SEP 79	265 EP 79	26SFP70	2415070	26SEP 79	-SPRING CREEK	3 4AUG 70	14A18.70	1441679	14411670	14A15.70	14415.70	1440679	55F P 79	SSEP79	SSEP79	5SEP 79	<b>5SEP79</b>	5SEP 79	55EP79	65EP79	6SEP 79	62EP79	07410	02677	654779	02577	6SEP 7	6SEP 79	626979	ESEP 79	6SEP79	62EP 19	65EP79	ESEP70	v	S	6SEP79	65EP 79
		MILE	1.0	1.0	0.4	0.1	0.1	•	1.0	1.0	0.1	0.1	9	5	1.0	gSS	1.00	-	0	-	-	-	0.1	0.1	0.	0	1.0	0.1	0.1	1.0	1.0	°•	0,0	) -	0.1		5 · 1		0	0	0.1	7.0		)•I	1.0	0.1	1.0	1.0	0.1

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HOLDS ALABAMA WONTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS -- WHEELER RESERVOIR, ALABAMA TASK I - ODI LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GLUTERSVILLE RESERVOIRS

REMARK 100 0.05 0.01 -- CONCENTRATIONS OF DOT --000 (UG/G) --0.02 --007(UG/G)---0,P P,P 0.02 0.02 0.02 (E) 1.71 FILET MT. (GM) 30.0 31.0 33.0 30.0 32.0 28.2 34.0 33.0 26.0 30.0 26.5 23.0 30.0 30.0 140 110 120 130 335 550 345 625 220 300 LENGTH T.MT 550 270 320 320 261 280 280 159 1159 401 376 416 315 341 250 233 247 245 245 248 252 135 156 145 279 156 C. CATFISH
BLUEGILL
BLUEGILL
BLUEGILL
BLUEGILL
BLUEGILL
GIZARD SHAD
GIZARD SHAD SPECIES 1-005 FID LAS LABIU 1-010 1-129 1-00 6 1-005 SLI SLI **SL1** SLZ SLI ----TENNESSEE RIVER 50 5 260.0 31JUL79
26 DA TE 260.0 MILE

L.M. BASS L.M. BASS L.M. BASS L.M. BASS L.M. BASS

1-00

261

23.0 23.5 10.4 12.0

BLUEGILL BLUEGILL BLUEGILL

31 JUL 79

The same of

TASK 1 - DDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT MILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS ENGINEERING AND ENVIRONMENTAL STUDY OF DDI CONTAMINATION HUNTSVILLE SPYING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS — MMEELER RESERVOIR, ALABAMA

	RE MA RK		•	•						10.1						•	•						•						*			2										• • • • • • • • • • • • • • • • • • • •			
DOTR		•	• • •	1.3	•	•	•	•	•	90	•	•	•	•	•	• (	•	•	• (	• •	•	•	0.2	•	•	•	•	• •	0.2	2.3	3.7	70.	1.6	7.0	1.8	•	•	•	•	•	٩	,	•	•	•
F 154, UG/6	# I N (06/6)	•	•1	1.3	•	•	•	•	•	• [	•	•	•	•	•	• ;	•	•	• •	• (	•	•	0.1	•	•	•	•	• (	2.0	2.3	3.7	7 .	9•	7.0	1 • B	•	•	•	•	•	• 6	•	•	•	•
	UG/6)	•	0.03	940	•	•	•	•	•	77.0	•	•	•	•	•	• ?		•	• •	• •	• •	•	0.06	•	•	•	•	• (	90.0	0.75	1.32	7 6	0.57	2.51	0.55	•	•	•	•	•	. 4			•	•
MEASURED	00E (UG/G)-	•	0.02	0.16	•	•	•	•	•	0.12	•	•	•	•	•	• ?	10.0	•	•	•	٠.	•	0.01	•	•	•	•	• •	0.01	0.25	0.43		02.0	0.84	C. 15	•	•	•	•	•				•	•
QF DD1	16/61 - P.P	•	, 9	640	•	•	•	•	•	44.0	•	•	•	•	•	• 6	*0.0	•	•	•		•	0.03	•	•	•	•	• •	40.0	0.81	1 • 2 2	4.0	0.63			•	•	•	•	•		, ,		•	•
LAT I ONS	000 (UG/G)	•	0.02	0.07	•	•	•	•	•	• 7	•	•	•	•	•	• 6	70.0	•	• •	• (	٠.	•	0.02	•	•	•	•	• •	0.02	0.30	0.42	2.08	0.11	0.88	0.20	•	•		•		• 6	•	. •	•	•
CONCENTRATIONS	9.4 P.P	•	0.02	စ္	•	•	•	•	•	000		•	•	•	•	•	70.0	•	•	• (	• •	•	0.02	•	•	•	•	•	0.03	0°0	9.14	0.0	40.0	0.24	0.0	•	•	•	•	•	• [	•	•	•	•
١	001(UG/G)	•	0.02 <	0.12	•	•	•	,	•	0.03		•	•	•	•	• 6	70.0	•	• '	• •		•	> 20.0	•	•	•	•	• •	0.02	0.11	0.17	20.0	0.04	°.	0.08	•	•	•	•		2 2 3	•		•	•
	LIP10S	•	0.13	2.65	•	•	•	•	•	2.32		•	•	•	•	.;	1.0	• ,	• •	• (		•	0.15	•	•	•	•	• •	0.14	3.14	3.25	, a	3.63	10 • 20	1.53	•	•	•	•	•	. 7.2	•		•	
FILET	(6.4)	11.5	0.01		4			250.0			30.0	30.0	34.0	30.0	30.0	30.0	• 6	200	0,0		30.0	36.0	•	8	30.0	٠. د :		13.	•	70.0	104.0	2 6	129.0	62.0	•	78.0	100.0	198.0	210.0	16.0	A 66 T	0.66	75.0	33.4	33.0
	1 T.HT	80	0, 1	•	3970	1880	1570	1920			420	320	335	400	310	697	• (4.7	200	230	200	210	650	•	120	150	100	2 8	2 2	•	498	670	0//1	1120	96	•	1 990	2590	2580	3000	2480	*	840	40	160	150
	LENGTH	157	131	•				208							271		• :	775	, ,	2 4 4	226	350	•	85	183	156	27.	1	•	379	431	3 2	474	440	٠	4 95	540	5 30	5	55.5 5.55	010	375	345	2,30	7.50
	SPECIES	LUEGIL	BLUEGILL	3	805	BUFF	SUFF	S.M. BUFFALO	1	A UF	3	 	3	₹ 	2 :	ž (	¥ ,	7 V		١Ŭ	LeMe BASS	S	L.M. BASS	LUEGI	BLUEGILL	LUEGI	1000	BL11FG 111	916	C. CATFIS	C. CATF1S	ا د	C. CATFIS	C. CATF1S	C. CATFIS	BUFF	44D8	7.0x				HITE CAA	HITE CRA	HITE CRA	Ľ
	LA810		0	1-001						1-003	,					8	700-1						1-003						1-004	1-16 3A	1-1636	1-16 50	1-1635	1-16 36	1-163							;			
	L A8		21.1	SLI						51.1	į					•	211						SLI						511	211	SLI	נו		SLI	273						5	1			
	F 10		9 5									2-4					ט נ	٠ ٧			, w	5-6	_									" 1		_		$\sim$		~ (			9 5		4	3	†
	DATE	31 JUL 79		170	175	31301.79	┍,	~ -	31 14 70	31.14.79	, –	31 JUL 79	~	~	31,01,70	31300	20015	4 ~	• •	• -		•		3	3	~ (	21.50	٦.	3	·c		0 4 UE 70		Ð	•	Ð	æ	•	ο.		2010	, •	•	Ð	6 AUG 79
	MILE	265.0	265.0	270.0	270.0	270.0	270.0	270.0	000	270.0	2.00.0	270.0	270.0	2.20.0	270.0	200	0.010	3 2 3	770.0	70.0	270.0	270.0	270.0	2.00.2	270.0	0.01	20.00	2.07	2	275.0	275.0	27.5	275.0	275 .0	275.0	175.0	275.0	275.0	0.512	275 00		275.0	275.9	0.567	275.6

ENGINEERING AND ENVIRONMEN STUDY OF DDI CONTAMINATION HUNTSVILLE SP "IN" BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- WHEELER RESERVOIR, ALABAMA TASK 1 - UDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

									Ī	-CONCENTRATIONS	RATIONS	100	MEASIRE	IN FI	MEASURED IN FISH . UG/G	1	
				·		:	FILET					, ,			-TOTAL DOTA	ATGO	
	5	LAB	LABID	SPECIES	LENCTE (MM)	3	:3	8 12 13 13 13 13 13 13 13 13 13 13 13 13 13	0,101100	9.6	0.0	0.6 0.0	0,0	1	(06/6)	(3/3n)	REMARK
		SLI	1-112	WHITE CRAPPIE	•	•	•	0.05	0.02	< 0.02	< 0.02	0.03	0.0	0.02	0.0	0.1	
	2-1			Ä	260	250	30.5	•	•	•	•	•	•	•	•	•	
	2-5			L.M. BASS	22	21	21 0	•	•	•	•	•	•	•	•	•	
7AUG 79				L.M. BASS	230	011	26.5	•	•	•	•	•	•	•	•	•	
	1			L.M. BASS	200	220	32.5	•	•	•	•	•	•	•	•	•	
				L.M. BASS	365	970	80.0	•	•	•	•	•	•	•	•	•	
	P		•	L.M. BASS	330	450	0	•	•	•	•	•	•	•	• (	• ;	
	5'	25.1	1-172	LeMe BASS	•	•	•	0.0	0.02	20°0 >	× 0°02	> 0.0	200	0.01	0		_
	7			BLUEGILL	8	9	8	•	•	•	•	•	•	•	•	•	
7AUG 79	7-0			BLUEGILL	185	130	21.5	•	•	•	•	•	•	•	•	•	
	6-3			BLUEGILL	185	9	17.0	•	•	•	•	•	•	•	•	•	
	10			BLUEGILL	175	2	25.0	•	•	•	•	•	•	•	•	•	
	Ş			8LUEG11L	195	190	33.0	•	•	•	•	•	•	•	•	•	
7AUG 79				BLUEGILL	160	120	25.0	•	•	•	•	•	•	•	•	•	
7AUG 79		<b>SL1</b>	1-149	BLUEGILL	•	•	•	> 60°0	0.02	20.0 >	< 0.02	0.03	5 0 0	900	1.0	2.0	
AUG79	7-1			GIZZAKD SHAD	265	190	•	•	•	•	•	•	•	•	•	•	
741679	7-2				260	210	•	•	•	•	•	•	•	•	•	•	
7AUG 79	1-3				285	170	•	•	•	•	•	•	•	•	•	•	
7AUG79	1				260	180	•	•	•	•	•	•	•	•	•	•	
7AUG 79	٢				265	180	•	•	•	•	•	•	•	•	•	•	
AUG 79	9				260	190	•	•	•	•	•	•	•	•	•	•	
_		211	1-155	GIZZARD SHAD	•	•	•	0.57 <	0.02	C 0.02	20°0 >	90.0	0.01	900	0.1	0.2	
	1-1			C. CATFISH	<b>463</b>	1030	11150	•	•	•	•	•	•	•	•	•	
	7-7			C. CATFISH	462	086	0.02	•	•	•	•	•	•	•	•	•	
	1-3			C. CATFISH	465	928	5	•	•	•	•	•	•	•	•	•	
	1			C. CATFISH	342	<b>\$</b>	39.0	•	•	•	•	•	•	•	•	•	
	7			C. CATFISH	362	420	45.0	•	•	•	•	•	•	•	•	•	
	q			C. CATFISH	325	325	33.0	•	•	•	•	•	•	•	•	•	
	ð	26.1	1-116		•	•	•	1.17	0.04	2 <b>0</b> ° 0	900	0.29	90.0	0.24	٥.7	0.1	٠ 9
	2-1			ų.	485	1930	38.0	•	•	•	•	•	•	•	•	•	
	7-7			BUF.	210	2330	33.5	•	•	•	•	•	•	•	•	•	
				3	460	1 580	0.6	•	•	•	•	•	•	•	•	•	
	12			3	450	1620		•	•	•	•	•	•	•	•	•	
	ĩ			S.M. BUFFALD	455	1680	170.0	•	•	•	•	•	•	•	•	•	
				2	49.5	1730		•	•	•	•	•	•	•	•	•	
		SLI	1-114	3	•	•	•	4.23	0.05	0.20	0.30	16.0	0.27	1-15	2 <b>~ 9</b>	7	
	1-6			L.H. BASS	240	210	26.5	•	•	•	•	•	•	•	•	•	
	2-5			•	310	1	65.0	•	•	•	•	•	•	•	•	•	
	5-3			•	245	240	34.0	•	•	•	•	•	•	•	•	•	
	ţ				420	1110	0.46	•	•	•	•	•	•	•	•	•	
	2				370	260	74.0	•	•	•	•	•	•	•	•	•	
	٩				330	\$ 0	52.0	•	•	•	•	•	•	•	•	•	
-		SLI	1-115	L.M. BASS	•	•	•	0.15	0.03	< 0.03	< 0.03	< 0.02 <	0.02	20.0	0.0	7.0	_
6 AUG 79	1-9			BLUEGILL	187	105	19.0	•	•	•	•	•	•	•	•	•	
-	7-9			<b>BLUEGILL</b>	174	110	29.0	•	•	•	•	•	•	•	•	•	
	6-3			BLUEGILL	8 2 8	170	34.0	•	•	•	•	•	•	•	•	•	
	10			BLUEGILL	179	130	24.0	•	•	•	•	•	•	•	•	٠	
	Ţ			BLUEGILL	175	110	21.0	•	•	•	•	•	•	•	•	•	
6A UC 79	9			BLUEGILL	185	140	24 00	•	•	•	•	•	•	•	•	•	
	š	213	1-150	BLUEGILL	•	•	•	0.05	0.02	20.0 >	< 0.02	< 0.02	0.02	0.05	1.0	1.0	

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MISVILLE	SPHING BRA	IN IMPORTAN	T FISH SPEC	ADJACENT L	NOTAN CREEK, AND ADJACENT LANDS AND HATERS WHEELER RES	HAR ELER AND	HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA TASK 1 - OST LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTENSVILLE RESERVOIRS	RESERVOIRS	
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	•	•	•	•	•	•	,	•	•		•					•	
	•	•	•	•	•	•	•	•	•	2 C			WHITE CRAPPI			9 A 1 K 7 9 4	2000
	•	•	•	•	•	•	•	•	•				TELLE CONTRACT			-	, NO.
	•	•	•	•	•	•	•	•	•		170		BHITE CHAPPI		7	3	5
•	2.1	7.1	1.73		06.1	•	•	0.00				, .	WHITE COADDIE	1-031	<u> </u>	943679 (	7.40
•	•	, ,		1 2 2			110		9 6		, , , , ,	2		0 0 0	9		200
	:	:		2.0			. 0		0.00	 	9 500	n or	V.M. BUTTALU	47 CO - T		2000	2 %
	*	•	1.09	0.50	2.95	20.0	0.20	0.17	3.04		2230		V	1-6.5	į	3	0.05
	-	-	0.56	0.16	0.29	0.12	0.11	0.10	3.54		4130		S.M. BUFF	1-03 IC	Ų.	AUG 79	8
	0.0	0.9	0.31	0.13	0.32	0.13	000	20.0	6.07		1790		S.M. EUFF	1-0318	I.	AUG 79	290.0
<b>3</b> C	0.3	0.2	0.09	\$ •	80°3	0.02	< 0.02	~	5.75		1530		S.W. BUFF	1-03 1A	-	8 C 30	290.0
•	2.0	2.0	0.63	0.22	0.81	0.09	0.06	0.15	2.66		•		BLUE CATE	1-050	Ğ	94U679 C	290.0
	0.7	0.7	0.27	0.08	0.30	0.02	0.02	0.02	2.17	29.5	230	275	BLUE CATE	1-030		9A'1679	290 0
	0.7	0.7	0.24	0.09	0.26	0.08	_	0.05	œ	31.0	530	370	C. CATFIS	3060-1	1-5 5/1	9AUG79	290.0
	0.5	0	0.15	0.05	0.20	\$	< 0.02	~	6	31.0	450	345	C. CATFISH	1-03 ou		9AUG 79 1	290.0
	1.9	1.9	0.61	0.32	44.0	0.35	0.02	0.15	٠	36.5	260	290	BLUE CATE	1-0300		9AUG 79 1	290 0
	1.0	1.0	0.29	0.15	0.22	0.06	0.12	0.14	2.37	35.5	1030	450	C. CATEIS	1-0308	-2 SLI	9AUG79 1	290.0
	2.2	2.2	0.70		66		0	0.17	\$	33.0	1580	500	C. CATFISH	1-0364		9AUG79 1	290.0
	0.2	0.1	0.0	10.0	07	^ o. &	< 0.02	~	0.20	35.7	225	28	WHITE BAS	1-125	OH SLI	6SEP79 C	285 0
	•	•	•	•	•	•	•	•	•	43.0	330	294	WHITE BASS		ī	65EP79	285.0
	•	•	•	•	•	•	•	•	•	33.0	240	260	WHITE BASS		-2	6SEP 79	285.0
	•	•	•	•	•	•	•	•	•	35.0	260	274	WHITE BASS				285.0
•	0.1	0.0	10.01	< 0.01 ·	< 0.01	10.01	< 0.03	< 0.02	0.05	•		•	BLUEGILL	1-029	INS MO	9AUG79 C	285.0
	•	•	•	•	•	•	•	•	•	•	80	150	BLUEGILL			9AUG79 6	285 •6
	•	•	•	•	•	•	•	•	•	13.5	8	140	BLUEGILL			9AUG 79 6	285.0
	•	•	•	•	•	•	•	•	•	24.5	100	165	BLUEGILL			9AUG79 6	285.0
	•	•	•	•	•	•	•	•	•	15.0	50	145	BLUEGILL		3	9AUG 79 6	285.0
	•	•	•	•	•	•	•	•	•	18.0	90	160	BLUEGILL			9AU679 6	285.0
	•	•	•	•	٠	•	•	•	•	16.5	80	155	PLUEGILL		Ľ	-	285.0
•	0.3	0.2	0.12	0.02	0.06	0.03	< 0.02	< 0.02	0.35	•			L.M. EASS	1-025	SL1	9AU679 C	285.6
	•	•	•	•	•	•	•	•	•	•	1060	39°	L.M. BASS			94 UG 79 5	285 .0
	•	•	•	•	•	•	•	•	•	36.5	470	310	L.M. BASS		<u>.</u>	AUG 79	285.0
	•	•	•	•	•	•	•	•	•	34.5	640	335	K		1	AUG79	285.0
	•	•	•	•	• •	•	•	•	•	34.0	390	295	E			A UG 79	285 0
	•	•	•	•	•	•	•	•	•	34.0	\$0	305				AUG 79	285.0
	• }	• }	•	• :	•	•		• }	•	31.5	260	275	H. BASS	,	1	-	285.0
•	0,	0.7	0.29	0.07	0.22	0.0	°,	0.02	0.81	• ;	,	. ;	9 CF F	1-027	2	AUG79	285-0
	•	•	. •	• •				. •		9 16	2240	5 C S	8 UF F			AUG 79	285.0
	•	•	•	•	•	•	•	•	•	, o	0017	5 6	V. H. BUFFALO			9AUG79 2	)
	•	•	•	•	•	•	•	•	•	33.5	1310	<b>\$</b> 50	BUFF		i		785.0
	•	•	•	•	•	•	•	•	•	35.5	2850	540	BUFF		~~	9AUG79 2	285.0
	•	•	•	•	•	•	•	•	•	35.0	1500	440	BUFF		1		285.0
	3.9	3.9	1.19	0.35	1.56	0.31	0.26	0.23	2.20	•			CATE	1-02.		79	285.0
	•	•	•	•	•	•	•	•	•	30.5	1 35 0	525	CATE			9AUG 79 1	•
	•	•	•	•	•	•	•	•	•	31.0	1040	Ş	LUE CATE			AUG 79	•
	•	•	•	•	•	•	•	•	•	۶.	110	510	LUE CATE		1	<u>ે</u>	285.0
	• •	• •	. •	. •	• •	• •	• •	•		29.5		\$ 80°	LUE CATE		₩,	9AUG 79	•
				•		, (		•			1240	60.	C 47F			9AUG79 1	285.0
	•	•	•	•	•	•	•	•	•	9.0	720	415	CATE		_	940679	
REMARK	9	(9/30)	P. P	0, 9	P . P	0,0	P • P	0,0	3	(64)	( M)	Ĩ	SPECIES	CABID	EN LAB	DATE F	ATTE
		312	- (9/3J	DDF ( DG /G)	1000	000 (UC	<b>19/91</b>	DDT (UG/G)	LIPIDS	¥1.	H 7 .HT	LENGT					
	D018									FILET							
	Ï	SY SO 'HSI.	E0 11 F	MEA SURED	OF DOT	-CONCENTRATIONS	CONCENT	ı									

ENGINEERING AND ENVIRONMENTAL STUDY OF DDI CONTAMINATION HUMISVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- WHEELER RESERVOIR, ALABAMA TASK 1 - 30T LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

	REMARK								•	•					•	•												•						M.D.						N.S.	•				
•	MAX (UG/G)	•	• [6	•	•	•	•	•	• (	<b>?•</b> 0	• •	•	•	•	• (	1.0	• (	• •	• •	•	•	1:0	•	•	•	•	• •	2.1	•	•	•	•	• •	0.0	•	•	•	•	•	• (	0.1	•	• (	• •	,
FISH, UG/G	1 (5/32)	•	• 6	•	•	•	•	•	• ;	1.0	• •	•	•	•	• (	0	•	• (	• (	. •	•	1.9	•	•	•	•	• (	2.1	•	•	•	•	• •	9-0	•	•	•	•	•	• (	0.0	•	• •	• •	,
N Z	UG /G )	•	. 6		•	•	•	•	• ;	0.0	• •	•	•	•	• ;	0.0	•	• '	• (	. •	•	0.57	•	•	•	•	• •	900	•	•	•	•	• •	0.35	•	•	•	•	•	•	0.01	•	• •		1 ,
MEASURED	ODE (UG)	•	.0-0	•	•	•	•	•	• ;	10.0	• •	•	•	•	•	0.01	•	• •		. •	•	0.16	•	•	•	•	• •	0.21	•	•	•	•	• •	80	•	•	•	•	•	• 3	<b>10.0</b> ×	•	• (		, ,
04 001	-000(UG/G)	•	0.00	•	•	•	•	•	• ;	60.0	• •	•	•	•	•	1000	•	• •	• •		•	0.59	•	•	•	•	• •	0.72	•	•	•	•	• •	0.26	•	•	•	•	•	•	< 0.01 <	•	• •	. •	, ,
-CONCENTRATIONS	000 (	•	0.0	•	•	•	•	•	• ;	20.0	• •	•	•	•	•	1000	•	• (	• •	• •	•	0.21	•	•	•	•	• •	%	•	•	•	•	• •	0.0	•	•	•	•	•	•	× 0•01	•	•	• •	, ,
CONCENT	UG/G)	•	0.02	•	•	•	•	•	•	70.0	• •	•	•	•	•	000	•	• (	• •		•	0.23	•	•	•	•	• •	0.17	•	•	•	•	• •	90.0	•	•	•	•	•	•	× 0°03	•	•	• •	) (
	001(UG/G)	•	0.0	•	•	•	•	•	•	70.0 >		•	•	•	•	70.0 >	•	• (	• (	•	•	0.18	•	•	•	•	• •	0.0	•	•	•	•	• •	< 0.02	•	•	•	•	•	•	~0°0 >	•	• •		
8	(1)	•	.0.0	•	•	•	•	•	•	*!	• •	•	•	•	•	0.03	•	• •	• •	. •	•	2.96	•	•	•	•	• •	2.79	•	•	•	•	• •	0.24	•	•	•	•	•	•	0.05	•	• •		) 4
ברזכי	. 69 . 69	29.0	2017	37.5	34.0	34.5	29.5	31.0	0.0	27.6	23.0	21.0	19.0	17.0	17.0	• ;	0.00		3.4	34.0	32.0	•	35.5	37.0	33.5	9000	30.06		31.5	35.0	8	36.00	3 5 6		32.5	30.0	2	31.5	37.0	•	•	30.0	20.0	37.0	39.0
L. ;	7.W.T	100	2 '	460	260	300	190	210	770	• 6	100	110	100	<b>0</b>	8	• 6	200	200	1570	1 800	2270	•	1400	1740	1370	1040	830	•	200	280	190		720	•	250	150	95	120	190	•	•	230	100	320	310
	LENGTH (MM)	205		305	265	280	235	245	360	• 6	175	3	170	165	165	• 6	0 0	7 4	5.28	550	290	•	445	\$ 5	e i	400	2 8 6	} •	230	38	245	2 2	82	;	260	230	8	130	265	•	•	255	2 2 2	275	270
<b>X</b>	SPECIES	CRAPPIE	CRAPPIE	_	BASS	BASS	BASS	BASS	BAS	#ASS	1115	ור. ברו	111	יור	1	111		CATETAN	CATETON	CATFISH	CATFISH	CATFISH	BUFFALO	BUFFALO	BUFFALO	BUFFALO	BUFFALO	BUFFALO	BASS				BASS					CRA			CRAPPIE	BASS	BASS	BASS	8 A S S
	Š	WHITE	MAI TE	r. H.	r. A.	r. H.	Ë		֝֡֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֓֡֓֡֝֡֡֓֡֓֡֓֡֓֡֓֡֡֡֡֡֡	R - 14 5	BLUEGIL	<b>BLUEGI</b>	BLUEGILL	BLUEGILL	BLUEGILL			: כ :				3	S.H.	S.H.	E		E 2	. F	WHITE	HH17E	WHITE		116	WHITE	WHITE	HHI TE	<b>¥</b> 11€	WHITE	WHITE	THE STATE	WHITE				
	LABID		1-032	)					4	1-03					;	<b>1-034</b>						1-035						1-036						1-037							1-038				
- -	LA6		215							361						7.						SLI						SLI						SLI							SLI				
•	f 10				•	*	*	•		5 7			10	6-5		- ر	11	-	-	. –	-	J		_	7 (	7 4	_			<b>m</b>		n (	7 4	ں ۱		-	1			-		1-6		, 60	5-5
	DATE	9AUG 79			9AUG 75	9AUG 79	2976	9AUG 79	9AUG 79	9 A US 79	941679	9AUG 78	9AUG 79	9AUG 79	9A C 73	YAUG /Y	1 3 A I IC 70		1344679	13AUG 79	~	~	13AUG 79	13AUG79	134067	1 34 6 7	3415.7	13AUG 79	13AUG79	1346670	134667	1 3 4 0 6 1	1 34 LG 79	13AUG79	13AUG 79	13AUG79	1340579	13AUG79	2941	13AUG79		13AUG 79	13ALE 70	13AUG 79	13AUC 79
	HILE	0°06		8	250.0	290 00	ے۔ 062	2000	0.062		2 2	0.06	290.0	0.06	0° 0			20.5	205.0	295.0	295.0	295.0	295 00	295.0		2000	20,00	295.0	295.0	200	295			295.0	295.0	295.0	295.0	295.0	295	2	295.0	292	205.0	295.0	295.0

ENGINEERING AND ENVIRONMENTAL STUDY OF DDI CONTAMINATION HUNTSVILLE SPLING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- MHEELER RESERVOIR, ALABAMA TASK 1 - DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILLSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

	:	) REMARK		•							*		M.D.	•	_										I O						<b>x</b> S.	• " "						*								_	•			d E	
J	L DOTR- MAX	9/90	•	3	•	•	•	•	•	•	•	46.3	3.0	-	4	<b>.</b> .	1.	12.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	• -	•	•	•	•	•	•	0	;	3.9	5.4		21.0	,
154,06/	TOTAL	(9/90)	•		•	•	•	•	•	•	0.0	46.3	3.0	1:1	4.	1:4	1.4	12.5	•	•	•	•	•	•	0	•	•	•	•	•	•	9	•	•	•	•	•	0.0	•	•	•	•	•	•	••	4.0	3.9	2 ° 4	4	21.0	, ,
Z	5	4	•	0.03	•	•	•	•	•	•	0.02	14.50	200	0.54	1.63	990	0.53	3.91	•	•	•	•	•	•	0.34	•	•	•	•	•	•	0.0	•	•	•	•	•	0.0	•	•	•	•	•	•	7	•	1.36	8	•	•••	
MEASURED	006 (1	0,0	•	0.01	•	•	•	•	•	•	0.01	3,32	9.0	0.22	0.47	0.16	0.22	9.73	•	•	•	•	•	•	0.01	•	•	•	•	•	•	0.01	•	•	•	•	• •	0.0	•	•	•	•	•	•		0.34	C. 42	0-25	0.44	1.31	
OF 00T	19/9/	9	•	0.03 <	•	•	•	•	•	•	٥.	22.20	9	ç	r,	۳,		`	•	•	•	•	•	•	0.19	•	•	•	•	•	•	0.02	•	•	•	•	•	0.02	•	•	•	•	•		~	ó	m	•	٠,٠	10.50	
A TIONS	n) 000	d 0	•	20.0	•	•	•	•	•	•		4.19	0.41	0.23	0.50	0.03	60.0	1.03	•	•	•	•	•	•	10.0	•	•	•	•	•	•	0.02 <	•	•	•	•	• •	> 0.0 >	•	•	•	•	•	•	0.04	0.23	0.51	0.36	<b>S</b>	900	1
-CONCENTRATIONS	(9/9/	9.	•	0.02 <	•	•	•	•	•	•	0	1001	0.05	0.07	0.09	000	90.0	0.35	•	•	•	•	•	•	0.13	•	•	•	•	•	•	0.02	•	•	•	•	•	< 0.02		•	•	•	•	•	0.07	0.07	0.12	0.11	0.13	0.0	•
Ĭ	001(	0.P P.P		< 0.02 <	•	•	•	•	•	•	0.02 <	0.51	90.0	0.11	0.09	80.0	0.14	0.20	•	•	•	•	•	•	900	•	•	•	•	•	•	< 0.02	•	•	•	•	•	< 0.02	•	•	•	•	•	•	< 0.02	0.08	0.18	0.14	0.05	0.04	;
	LIPIDS	*	•	0.05	•	•	•	•	•	•	0	0.71		٩	ņ	٦,	4	۲.	•	•	•	•	•	•	44.0	•	•	•	•	•		0.04	•	•	•	•	•	0.06		•	•	•	•	•	ò	1.73	4.54	2.73	3.25	3.09	
	FILET MT.	(NS)	37.5	•	56		25.5						_		_	54.0	_		_	~	_	_	115.0	~	•	31.5	27.0	32.0	27.5	14.0	•		21.0	7	٠:	2 5	2 4	•	95	78	53	112	63.0	91		9	\$	20	4	103.0	
	I X. T	E 5	730	•	120	S	110	8	20	2	•	870					_	•	1 200	1920	1650	1 660	1580	1580	•	250	100	160	٤	20	•	•	9	0.	9	2 6	מ מ	`	850	570	420	1000	049	710	•	4	520	2	450	1010	) )
	LENGT	Î	375	•	175	\$	175	180	140	3	•	064	495	415	465	450	480	•	\$10	8	440	\$	480	480	•	275	200	235	185	175	•	•	150	155	061	601	201	•	ş	340	305	9	360	365	•	38	380	8	375	0,4	
		SPECIES	L.M. BASS	L.M. BASS	BLUEGILL	<b>SLUEGILL</b>	61 UEG 111	BLUEGILL	BLUEGILL	8L UEG 1.L	BLUEGILL	C. CATFISH 490	C. CATFISH	S.M. BUFFALO	S.4. BUFFALD	S.M. BUFFALD	S.M. BUFFALD	S.M. BUFFALO	S.M. BUFFALO	S.M. BUFFALD	WHITE CRAPPIE	WHITE CRAPPI	WHITE CRAPPIE	BLUEG11L	BLUEGILL	BLUEGILL	BLUEGILL	91.156.71.1	A1 UFG 11 1	L.M. BASS	L. W. BASS	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	C. CATFIS	C. CATFIS	S	C. CATFIS	C. CATFISH										
		LABIO		1-035							1-040	1-16 oA	1-1668	1-1660	1-1660	-1666	1-1666	1-166							1-157							1-0-1						1-045	,						1-06>	1-0664	1-0265	1-086	1-08 40	1-080	
		L &B		SLI								SLI	SLI	SLI	<b>SL1</b>	SLI	S	SLI							SLI							SLI						1	1						<b>S</b> F 1	SLI	S L 1			25.1	) )
		F 10		<b>E</b> 03	_				Ş	_			_		_	~			~		~	~					4-5					_			-		) \{						5-5		J			_	-	9	•
		DATE	134 UG 79	134UG 79	13AUG 79	134UG79	1340679	13AUG 79	134 66 79	13 AUG 79	13AUG 79	14AUG79	14AUG 70	14AUG 79	14AUG 79	14AUG79	14AUG 79	1440670	1440679	1440679	1440679	14AUG 79	1440679	1446670	14 AUG 70	1440679	1440679	14AUG79	1440679	1440679	1440679	1440679	14 AUG 79	2 3741	I A De P	2 30 44 1	144.6	14ALK. 79	15AUG 79	1540679	1 5 AUG 79	15AUG 79	15AUG 79	15AUG79	1540679	16AUG 70	16AU679	164 UG 79	16AUG 79	164.579	
		41LE	295 •0	295 .0	295.0	295 •0	295.0	295 0	295 .0	295.0	295 .0	300.0	300 00	300 00	300 00	300.0	300.0	200	300 00	200.0	300	300	300.0	300 300	300	300.0	300.0	300	300	300	0 00 00 00 00 00	300.0	300.0	000	200	3 6	8	000	300	300 00	300 300 8	300 00	00°	300.0	0.00€	0. 505	3.53.6	905	305.0	305.0	

I.

TASK 1 - DDT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HOLDS SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- MMEELER RESERVOIR, ALABAMA

F1 LENGTH T.WT H	F1 LENGTH T.WT H	F1 LENGTH T.WT H	F1 LENGTH T.MT H	F1 LENGTH T.MT H	F1 LENGTH T.WT M	T. P.	T.W.T	FIL	F.	LIPIDS	=	CONCENTRATIONS UG/G1DDD(1)	ATIONS OF D	5 1	MEASURED DDE LUG	Z S	FISH, UG 76.		
_	LAS LABID SPECIES (MM) (	LAS LABID SPECIES (MM) (	LABIO SPECIES (MM) (	D SPECIES (MM) (	) (MM) S	_	_	£	(64)	(2)	9.0	٩	9.0	4	0,0	0	( 2 y y )	(9/90)	REMARK
COM SLI 1-086 C. CATFISH	COM SLI 1-086 C. CATFISH .	SLI 1-086 C. CATFISH .	1-086 C. CATFISH .	6 C. CATFISH .	ATFISH .	•		٠	•	3.71	0.58	0.10	1.17	5.66	0.98	3.70	12.8	12.0	
353	2-1 Semi BUFFALU 325	SAME BURFALU 325	BUFF ALG 325	BUFF ALG 325	BUFF ALG 325		7 6	0	186.0	•	•	•	•	•	•	•	•	•	
2-3 SAM BUFFALC 495 21	Z-3 Sat Buffer C 495	See Clark Burks Assessed	BUFFALC 495	BUFFALC 495	BUFFALC 495		2 2	Ģ	126.0	• '	•	• (	• (	• (	•	•	•	•	
2-4 S.M. BUFFALO 500	2-4 S.M. BUFFALO 500	S.M. BUFFALO 500	BUFFALO 500	BUFFALO 500	BUFFALO 500		2 13	0	121.0	•		•		•		•	•	• •	
2-5 S.M. BUFFALO 490	2-5 S.M. BUFFALO 490	S.M. BUFFALO 490	BUFFALO 490	BUFFALO 490	BUFFALO 490		22	8	162.0	•	•	•	•	•	•	•	•	•	
2-6 S.M. BUFFALD 450	2-6 S.M. BUFFALD 450	S.M. BUFFALD 450	S.M. BUFFALD 450	S.M. BUFFALD 450	BUFFALD 450		~	020	148.0	•	•	•	•	•	•	•	•	•	
.M. BUFFALO	CCT OCT I-093 Some BUFFALO	SEI I-093 SOM BUFFALD	I-093 Seme BUFFALO	3 Seme BUFFALO	BUFFALO	• ;		• 5	•	0.73 <	0.02 <	0.02	20.0		0.04	0.11	0.3	0.3	
		CONTROL TO THE CONTRO	8466	8466	8466	, e		200	200	•	•	•	•	•	•	•	•	•	
		00 4 CO 4	2748	2748	2748				36.0	•	•	•	•	•	•	•	•	•	
5-4 Lone BASS	5-4 Lone BASS	Lowe BASS	BASS	BASS	BASS	320		210	30.5	• •	٠.	. •	. •			• •	• •	• •	
5-5 L.M. BASS	5-5 L.M. BASS	L.M. BASS	BASS	BASS	BASS	365		860	68 68	•	•	•	•	•	•	•	•	•	
1.04 1.04	STA TO TOTAL STATE	SSER SECTION OF THE PERSON OF	SYNG TOTAL	Lone BASS	BASS	215		140	27.7			•	•	•	•	•	• ;	• ;	
tud oti imuse teste bass	And the rest beautiful to	SEI ITORE LOGO BASS	LOGC LOGG BADD &	DINECTIC	• •	•		• :	. ;	> *0*0	20.0	> 20°0	20.0	> 60.0	0.01	0.05		0.2	
6-1 5-05-01-C 1/3	6-1 5-05-01-C 1/3	B1166111 148	17.2	17.2	17.2	1 44	→		7.00	•	•	•	•	•	•	•	•	•	
6-3 BLUEGIC 250	6-3 BLUEGIC 250	8146711 250	200	200	200	20		2 5	7.6	• •	• •	•	•	• •	•	•	•	•	
9LUEGILL 145	9LUEGILL 145	9LUEGILL 145	145	145	145	145		200	12.5					• •	• •	• (	• •	• (	
6-5 BLUEGILL 140	6-5 BLUEGILL 140	BLUEGILL 140	1.0	1.0	1.0	140	•	0	13.0	•		• •	٠.				. •		
9-9	6-6 BLUEGILL 145	BLUEGILL 145	8LUE61LL 145	BLUEGILL 145	145	145 6	ō	0	12.0	•	•	•	•	•	•	•	•	•	
COM SLI 1-049 BLUEGILL	COM SLI 1-049 BLUEGILL	SLI 1-049 BLUEGILL	1-049 BLUEGILL	BLUEGILL	• ;	•	1	•	•	> *0°0	0.02 <	0.02	0.02 <	0.02 <	0.01 <	0.01	0.0	٠ <u>٠</u>	•
CATFISH 370	L-I C. CATFISH 370	C. CATPISH 370	CATPISH 370	CATPISH 370	28	370	<u> </u>	210	0.69	•	•	•	•	•		•	•	•	
1-3 CATETSH 380	1-3 CATETSH 380	Ce CATFISH 380	CATFISH 380	CATFISH 380	8 6		<b>7</b>		9.00	• •	•	•	• •	• 4	•	•	•	•	
1-6 CATFISH 435	1-6 CATFISH 435	. CATFISH 435	. CATFISH 435	. CATFISH 435	435		_	830		•					•	• •	• •	•	
1-5 C. CATFISH 410	1-5 C. CATFISH 410	C. CATFISH 410	. CATFISH 410	. CATFISH 410	410	410		570	42.0	•	•	•	•	•	•	•	•	•	
	C. CATFISH 3	C. CATFISH 3	C. CATFISH 3	C. CATFISH 3	m -	340		360	41.0	• ;	•	•	• ;	•	•	•	• ]	•	
2-1 Sel 1-120 C. C	2-1 Sel 1-120 C. C	-120 C. I.S.	1-120 C. I	ָ אַ נ	AIFISH 450 1	450	-	570	157.0	60.0	0.03	0.03	0.14	0.50	60.0	0.38	7.5	1.2	E
2-2 S.H.	2-2 S.M. BUFFALO	S.M. BUFFALO	M. BUFFALD	M. BUFFALD	BUFFALO	-	_	091	137.0	• •		• •	. •		. •		• •	• •	
2-3 S.M. BUFFALD 460	2-3 S.M. BUFFALD 460	BUFFALO 460	BUFFALO 460	BUFFALO 460	BUFFALO 460	3	_	1730	126.0	•	•	•	•	•	•	•	•	•	
2-4 S.M. BUFFALO 470	2-4 S.M. BUFFALO 470	BUFFALO 470	BUFFALO 470	BUFFALO 470	BUFFALO 470	470	_	1700	170.0	•	•	•	•	•	•	•	•	•	
Safe 179 2-5 Safe BUFFALO 450	S-5 S-M BUFFALO 450	BUFFALO 450	BUFFALO 450	BUFFALO 450	BUFFALO 450	450 650	- (	1270	141.0	•	•	•	•	•	•	•	•	•	
COM SLI 1-12 1 S.M. RISFALO	COM SLI 1-12 1 S.M. RISFALO	SLI 1-12 S.M. RIFFALT	1-12 S.M. RUSFALO	SAME BUSEALT SOC	BUFF ALT 500	3 '	4	920	Q* 877	12.7		40.0	. 2	. B. C.			. (		
3AUG79 4-1 WHIT	4-1 WHITE CRAPPIE	WHITE CRAPTE	WHITE CRAPPIE	WHITE CRAPPIE	CRAPP IE			310	43.0	; ;		•	; ·	<b>.</b>				•	
4-2 WHITE CRAPPLE 225	4-2 WHITE CRAPPLE 225	CRAPPIE 225	CRAPPIE 225	CRAPPIE 225	CRAPPIE 225	522	_	2	28 .0	•	•	•	•	•	•	•	•	•	
4-3 WHITE CRAPPIE	4-3 WHITE CRAPPIE	CRAPP 1E	CRAPP 1E	CRAPP 1E	CRAPP 1E		-	50	45.0	•	•	•	•	٠	•	•	•	•	
SAUGTO 4-4 WHITE CRAPPIE 212	4-4 WHITE CRAPPIE 212	CRAPPIE 212	CRAPPIE 212	CRAPPIE 212	CRAPPIE 212	212		9	39.0	•	•	•	•	•	•	•	•	•	
4-5 WHITE CRAPPIE 207	4-5 WHITE CRAPPIE 207	CRAPPIE 207	CRAPPIE 207	CRAPPIE 207	CRAPPIE 207	207	_	130	36.0	•	•	•	•	•	•	•	•	•	
4-6 WHITE CRAPPIE 201	4-6 WHITE CRAPPLE 201	WHITE CRAPPLE 201	WHITE CRAPPIE 201	WHITE CRAPPIE 201	CRAPPIE 201		_	120	32.0	•	•	•	•	•	•	•	•	•	
MAINE TO COM SLI 1-071 WHITE CRAPPIE	COM SLI 1-071 WHITE CRAPPIE	SLI 1-071 WHITE CRAPPIE	1-071 WHITE CRAPPIE	MHITE CRAPPIE	CRAPPIE	•		•	•	0.02 <	0.02 <	0.02	0.02	0.05 <	0.01	400	~	0.2	
5-1 1-5-	5-1 1-5-	BASS	BASS	BASS	BASS	295		400	200	•	•	•	•	•	•	•	•	•	
5-2 L.M. BASS	5-2 L.M. BASS	BASS	BASS	BASS	BASS	315		440	63.0	•	•	•	•	•	•	•	•	•	
L.M. BASS	S-3 L.M. BASS	9ASS	9ASS	9ASS	BASS	375		760	1000	•	•	•	•	•	•	•	•	•	
- E C	5-5	BASS	BASS	BASS	3455	, 4 , 0 , 0		061	38.5	•	• •	•	•	• ,	•	•	•	•	
5-6 Lehe BASS	5-6 Lehe BASS	BASS	BASS	BASS	BASS	270		280	٠.		•	• •		• (	• •	• •	• •	•	
COM SLI 1-122 LaMa BASS	COM SLI 1-122 LaMa BASS	1-122 LoHe BASS	1-122 LoHe BASS	2 LoHe BASS	BASS	•		•	•	> 80°0	0.02 <	0.00	0.02	0.05 <	0.01	0.05		0.2	_
															,				

ENGINEERING AND ENVINENTED STUDY OF DOT CONTAMINATION HANDS ALABAMA HANTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS -- WHEELER RESERVOIR, ALABAMA

TASK 1 - JOT LEVELS IN IMPONTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOINS

	REMARK								₩•0•																			-																2	•			
6	_	•	•	•	•	•	•	0.3	11.0	34.2	3.0	<b>0</b>	0 4		•	• (	٠.	•		• •			•	•	•	3.1	0.5	9.5	•	•	•	•	•	0	0	4.0	0.1	••0	2.8	37.0	2.8	& .	• •	1.0	2°0	2.6	۲.,	•
FISH, UG A	z G	•	•	•	•	•	•	0.1	11.0	34.2	3.0	<b>0</b>	0	0		• (	•	, (	• •	• •	7.7	•	•	•	•	3.1	0.5	9.2	•	•	•	•	•	0.2	7.0	0.3	0.1	0.3	2.8	37.0	2 · 8	8.5	4.0	7 6	21.9	2.6	9.5	•
Z	UG/G)	•	•	•	•	•	•	0.07	3 035	11.80	1.22	12.80	2.	1 00 V		• •	•	. •	• (	•	1.17		•	•	•	9	0.16	7	•	•	•	•	•	0.10	0.03	0.14	0.0	0.12	1.58	11.70	1.01	2.51		1.0	5.12	0.87	3.24	•
MEASURED	00E(	•	•	•	•	•	•	< 0°02	1.00	2,95	0.33	3,13	8	0.00	3	• •		, ,	•	•	0.23	•	•	•	•	0.21	0.04	0.64	•	•	•	•	•	0.02	< 0.01 <	0.01	< 0.01	0.03	0.0	1.05	0.00	9 9 9	8	0 0	1.78	0.32	96.0	•
CF 001	(06/6)— P.P	•	•	•	•	•		٩	'n	•	ô	•	2 . 12	•	2	• •	• •	, ،	, (	• •	48.0	2	•	•	•	14	0.16	6	•	•	•	•	•	. 9	9	7	ó	7	ç	7	~	~	7	, ,	11.20	٥.	o.	•
RA TIONS	000 (I	•	•	•	•	•	•	< 0.03	1.70	2.12	0.34	99.9	0.62	1,23		• •	, (	• •	• •	• •	12.7	•	•	•	•	0.71	0.07	1.49	•	•	•	•	•	0.02	< 0.02	0.03	< 0.02	0.05	0.10	2.80	0.21	0.10	740	0 0	3.83	0.41	1.31	•
-CONCENTRA TIONS	(9/9n)	•	•	•	•	•	•	8	ņ	₽	ð	ů.	0 0	; 9	2	• •	•	• •		• •		: ,	•	•	•	~	< 0.02	۲,	•	•	•	•	•	. ទ	0	0	0.0	0	Ç	7	7	?	٠,	<b>-</b> 9	0.0	ဝ့	∹	•
1	0,0	•	•	•	•	•	•	< 0°0 >	0.18	0.25	0.03	0.31	\$ 6	0.00		• •	, ,	• •	, ,	• •	80.0		. •	•	•	٦.	< 0.02	•	•	•	•	•	•			< 0.02				0.20	20°0 >	0.16	000		0.02	90.0	< 0.02	•
	LIPIOS (\$)	•	•	•	•	•	•	.11	2.54	1.48	1.45	68.4	2.35	ם מ		• '	•		• •	•	1.32	;	•	•	•	ಿ	.13	1.17	•	•		•	•			_	_	•	_	2.74	0.50	64.	1.16	7.80	5.23	3.34	3.92	•
13 513	6.5	12	11	0	12.5	12	91		8	110	30	8	30.6	6		154.0	120	140	-	. ~	3	2	20.8	20	30	96	8		2	2	2∶	0	2 .	2	•	•	•	•	•	•		7	2	ח ה	68.0	52		101
	1 1.HT	8	30	40	40	တ္သ	9	•	1150	860	220	820	260	2	• • • •	1440	2010	15.20	1030	0.00		, e	130	100	260	865	1 90	•	5	001	40		2 4	₹ '	65	110	110	9	100	8	•	950	430	7 20	240	420	•	930
	LENGT	140	135	130	155	25	155	•	475	410	295	430	310	D *		644	2 2	4	3 2	0 0	•	108	2,2	201	280	390	522	•	120	997	747	2 5	7 7 7	120		226									4 6			410
	SPECIES	BLUEGILL	<b>BLUEGILL</b>	<b>9LUEGILL</b>	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	C. CATFISH	CALTINA		S.M. RIEFALD	BINFFAI	RIFFAI	RUFFAL	RIFFAL	RUFFAI	BASS					Ĭ	L.M. BASS	<b>SLUEGILL</b>		3LUEGICL	ELUEGILL		Stuffert	GIZZARD SHAD	G12ZARD SHAD	GIZZARD SHAD	GIZZARO SHAD	GIZZARD SHAD	GIZZARD SHAD	GIZZARU SHAD	C. CATFISH	C. CATFISH		C. CATFISH	C. CATFISH	C. CATFISH	į				
	LABID							1-151	1-103A	1-10 38	1-1030	1-1035	¥ 51-1	7 0 0 1 1							1-167	1-1704	1-173	1-17 CC	1-1700	1-1705	1-1706	1-170										1-1300	1-1306	1-1,06	1-130	1-12 4A	1-1246	3 9	1-124	1-124	1-124	
	LAS												3										SLI			S	SLI	S								SLI					S	S	v.	<u>ק</u>	'n		S	
	F.10	_	•	•		0	•	J	-	~	-	1	-	֓֞֞֜֞֜֜֞֜֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	, ,	4 0	١ ^	•	• ^	1 ^	٠.	•		•	S	•	•					510				~	~	~	~	-	J	-	┛.	1	-	-	_	~
	DATE	23AUG 79	23AUG 79	234U679	2346679	23 AUG 79	23467	23AUG 79	28AUG 79	SBAUG 79	28 AUG 79	28AUG 79	28 AUG 79	28 A I K. 70	2011	SKAIE 70	. ~	,		* "	, ,	28 AUG 79	~~	28AUG79	28AUG79	28AUG 79	28AUG 79	28 AUG 79	28AUG 79	28AUG 79	ZBAUG 19	2000	20405	28 AUG 79	~	26AUL 79	Ň	28 AUG 79	28AUG79	284UG 79	·V		30 AUG 79		30AUG 79	30 AUG 79	30AUG 70	30AUG M
	MILE	9	310.0	Ç	310.0	310.0	310.0	310.0	315.0	315.0	315.0	315.0	315.0	314		200	315.0	315.0	315.0	315.0	315.0	315.0	315 00	315.0	315.0	315.0	315.0	315.0	315 .0	315.0	313.0	315		315.0	315.0	315.0	315.0	315.0	315.6	315 .0	315.0	320.0	350.6	2 5	2 2	0	0	320 00

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HONTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS -- MMEELER RESERVOIR, ALABAMA

1,

		RE MARK																																										
	P018-	_	•	•	•	•	1.2	•	•	•	•	• ,	2.8	•	•	•		•	0.7	•	•	•	•	• (	0.3	•	•	•	• •	•	1.3	•	• •	•	•	• '	0.9	•	• (	• •	•	•	7•0 0	0.9
RE SERVOIRS	F 15H, UG/6	#1% (06/6)	٩	. •	•	•	1.2	•	•	•	•	• •	8° 2	•	•	•	• •	•	0.7	•	•	•	•	• •	.0	•	•	•	• •	•	1.3	•	• •	•	•	•	9	•	•	• •	• •	•	7.0	0 0
		1	•	•	•	•	0.50	•	•	•	•	•	0.79	•	•	•	• •	•	0.27	•	•	•	•	•	.11.0	•	•	•	• •	•	0.47	•	• •	•	•	•	1.48	•	•	. (	• •	•	000	0.12
GUNTERSVILLE	MEASURED IN	00E (UG/G)	•	•	•	•	. 13	•	•	•	•	• •	0.19	•	•	•	• •	•	0.0	•	•	•	•	•	0.0	•	•	•	• •	•	0.12	•	• •	•	•	•	0.39	•	•		• •	•	0.01	0.0
	OF 001	16/61 P +P	•	•	•	•	0.35	•	•	•	•	• •	1.18	•	•	•	• •	•	0.23	•	•	•	•	•	.0	•	•	•	• •	•	0.27	•	• •	•	•	•	2.51	•	•	• •		•	0	0.12
THROUGHOUT WILSON, WHEELER, AND	RA T IONS	000 (UG/G)	•	•	•	•	0.13	•	•	•	•	• •	0.46	•	•	•	• •		0.03	•	•	•	•	•	0.02	•	•	•	• •	•	0.10	•	• •	•	•	•	1.21	•	•	• •	•	•	0	0.02
L SON, W	CONCENTRATIONS	-001 (UG/G)	•	•	•	•	0.02	•	•	•	•	•	6.11	•	•	•	• •		0.0	•	•	•	•	•	0,0	•	•	•	• •	•	0.18	•	. (	•	•	•	0.25	•	•	• •		•	× 0.02	0.02
HOUT WI	Ī	•	•	•	•	•	0.00		•	•	•	• ,	C.07	•	•	•	• •	•	< 0.02	•	•	•	•	•	< 0.02	•	•	•	• •	•	0.13	•	. •	•	•	•	0.18	•	•	• •	• •	•	< 0.62	0.02 0.02 0.02
THROUG		LIP10S	•	•	•	•	1.51	•	•	•	•	• •	0.21	•	•	•	• •	•	0.14	•	•	•	•	•	1.62	•	•	•	• •	•	1.17	•		•	•	•	0.30	•	•	. •	٠.	•	0.18	0.61
FISH SPECIES	F 11 FT	£ §	48.0	89.0	71.0	105.0	2	87.0	31.9	31.0	35.6	17.3	•	28.1	21.1	10.4	21.9	12.2	•	31.5	36.0	35.0	0.00	3 4 6	•	178.0	-	41.0	4	67.0	•	7	26.5	37	31.2	56.5	•	20.02	10.0	14.	19.0	18.9	•	• •
FISH SI		1.2 2.4	460	570	700	760	3	980	280	150	140	200	•	140	001	9 6	25	200	•	250	210	180	200	2002	•	1390	1 690	0621	1 500	380	•	9	130	250	180	80	• (	001		2 5	100	2	• !	an 4 av av
PORTANT		LENGTH (MM)	308	326		364		345	260	230	215	180	•	200	170	601	173	145	•	333	200	269	2 6	273	•	3	•	7				353	358 233	268	222	191	•	165	007	· ·	163	153		175
LEVELS IN IMPO		SPECIES	_	٠	r.	Ŧ, 1		į	L.M. BASS	•	L.M. BASS	L.M. BACK	LoMe BASS	BLUEGILL	9LUE61LL	פורת בפין דו	BLUFGTE	BLUEGILL	BLUEGILL		C. CATFISH	C. CATFISH	TOTAL OF	CATATA		•	r :	Ė	S.M. BUFFALD	į	<b>.</b>	•	Lene BASS	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	BLUEGILL	Stuest LL	A1 1166511	91066111	BLUEGILL	BLUEG1 LL	GIZZARD SHAD
- 201		LABIO					1-123						1-139						1-133						1-154						1-092						1-140						1-136	1-13 2A 1-13 38
TASK 1		LA9					517						SLI					_	SLI			_			SLI				_		51.1						SL1							\$£1 \$£1
4		5.0	~		<b>(1)</b>	2-2 4 7	, U	~	S	ĸ	4					010	9 40			~	<b>~</b> •	F-7		٠-	ں •	~	~ 1	77	<b>س</b> ر	~	Ų	^ 1	5 T		9 53				7-0 6		•	•	U	7-7-6
		9. M	30 A UG 70			30AUG 79				• •	30AUG 79			-	30 A U.S. 73							30AUC 79						304U6 /2					30AUG 79						2040672					30AUG 79 30AUG 79
		MILE	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	200.0	320 0	320.0			320	320.0	320.0	325.0	325.0	323.0	300	300	325.0	325.0	325 00	367	325.0	325.0	325.0	3636	325.0	325.0	325.0	325.0	325.0	362	328.0	325.0	325.0	325.0	325 0	325 00

ENGINEERING AND ENVIR STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- WHEELER RESERVOIR, ALABAMA

TASK I - DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

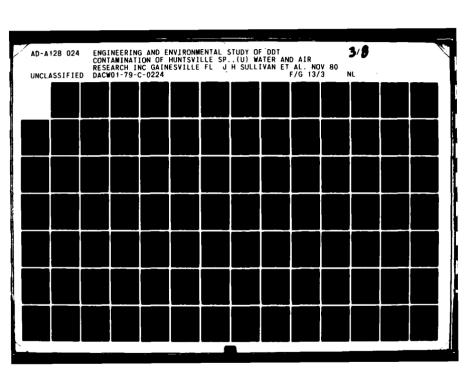
		REMARK			ř.		9							¥.0.																											2										
1	DO TR	(9/90)	14.3	32.1	7.0	16.7	1 · 8	2.0	5.9	16.1	5.2	9	4.5	2.3	•	•	•	•	•	•	0.1	•	•	•	•	•	•	••0	•	•	•	•	•	• (	0	•	•	•	•	• (	• 6	•	• •	•	•	• (	•	0	11.9	4.8	6.1
F1SH, UG A	TOTAL	(9/90)	14.3	32.1	o Q	16.7	(	5 (	5.9	16-1	2.5	0.5	4.5	2.3	•	•	•	•	•	•	•	•	•	•	•	•	•	0.3	•	•	•	•	•	• 3	<b>^</b> •0	•	•	•	• •	• (	9-0	}	•	•	•	. (	, ,	0.3	11.9	8.	6.1
¥		Í	5 •08	11,30	000	5.46	2.92	0.0	2900	3.68	1.08	0 2 1	0.92	0.54	•	•	•	•	•	•	10.0	•	•	•	•	•	•	0.11	•	•	•	•	•	• ;	16.00	•	•	•	• •	• (	0.25		•	•	•	•	, ,	90		1.32	1.34
MEASURED	č	9 9 9 9 9	0.63	1.67	< 0.01	0.58	0.25	0.10	0.21	5	*	0.04	0.29	0.13	•	•	٠	•	•	•	0.01	•	•	•	•	•	•	0.05	•	•	•	•	•		0.0	•	•	•	. (		0.10	•	•	•	•	•	•	0.03	0.86	0.33	0.41
OF 00T	13731	0,9 P,9	6.81	14.00		8-61	3 -88	0	1 • 2 4	6.73	2.09	0.22	2.00	9	•	•	•	•	•	•	9000	•	•	•	•	•	•	000	•	•	•	•	•	• ;	71.0	•	•	•		•	0.18	•	•	•	•	•	•	0.16	5.20	2 .20	7.54
RA TIONS		0.0	0.82	3.45	0°05	1.35	0.59	77.0	0.71	3.20	1.26	8	1.03	0.43	•	•	•	•	•		< 0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	• 3	*	•	•	• •	•	• •	< 0.03		•	•	•	•		0.03	3.02	8	1.38
CONCENTRATIONS			0.54	1 009	< 0.02	94.0	0 (	70.0	11.0	1.04	ပ	< 0.02	0.15	90.0	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	< 0°02	•	•	•	•	•	• =	610	•	•	•	•	•	0.0		•	•	•	•	•	< 0.03	0.49	90.0	0.35
1	-	ı	0.41	0.60	× 0.02	0.20		7000 >	50.0	0,00	0.11	< 0.02	60.0	0.05	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.08	•	•	•	•	•	• [		•	•	, ,	•	•	< 0.03	•	•	•	•	•	•	0.03	0.09	0.03	0.13
		(4)	~~	1.79	ヘ.	0	0	7.0		0	0	0.1	0.3	0	•	•	•	•	•	•	0.11	•	•	•	•	•	• '	1.09	•	•	•	•	•	(	5	•	•	• •	•	•	0.51	•	•	•	•	•	•	0.1	c	4.0	2.0
	FILET	9	•	•	•	•							55.0			0.67				8	'			38.0	•	747	21.0		£ ;	٠.	0.00	٠,	~						76.0	_	1	•	٠	٠	•	•	•	•	92.0	71.0	9.
	•	(F)	\$	9	200	2	•	2 ;	0 :	252	335	456	348	•	101	9 :	27	8	110	68	•	410	370	380	24.0	950	99	•		•	2300	2000	6607	1002	• 000	201	707	6	1384	1000	•	822	335	416	621	9	275	•	160	650	4
	1000	(HH)	213	212	565	761	•	(2)	367	330	304	308	291	•	90	90.	2 6	150	00	123	• ;	242	250	343	395	453	418		9 4				200		€ 23							-			398				343	370	376
		SPECIES	GIZZARD S		GIZZARD	GIZZARD	CIZZARD S								9LUE 61 LL	BLUEGILL	פרחבייור	BLUEGILL	BLUEGILL	BLUEGILL	LUEGILL	CAIFIS	CATEIN	CAILIN .	CATFIS	• CATFIS	C. CATFISH		S.M. BUFFALO	Sere purratu	Sent Burratu		Sen BUFFALU	Seme BUTFALU	S.M. BILEGALD	C.M. BIREALD	S.M. BUFFALO	SAMA BUFFALO	S.M. BUFFALD	S.M. BUFFALD	S.M. BUFFALO	C. CATFISH	C. CATFISH	3	3	<u>ت</u>	3	C. CATFISH	BAS	2 C C C C C C C C C C C C C C C C C C C	L.T. BASS
		LABIO	1-1320	1-1320	1-132E	1-1324	1 32	1012A	22.0-1	1-0726	0226-1	1-07 2E	1-072	710-1						-	: 10-1						6	1 50-1						1-155	-						1-095							1-165	1-138A	1-13 56	7367-1
		LAB												^							261							יר יי						-							SLI							StI	SLI	211	71
		F 10			- 1		5		n =		n		9 6		۰ ٥		۰ ۱	ο.	۰ م		. ر	٠.	٠,	-	٠,	٠,	9 8		2-2	4 (	9 ^	4 (	4 ^	4			~	~	~	7	J	1-1	-	~	~	1.5	_	J	•	2-5	^
		DATE		30AUG 79			30406							30406				3040619		٠,	2040617				22677	22677	2257		3357 F	50 E B 30	55EP 79	56 ED 20	45 EP 70	5.5FP 70	۲,	2 PAING 79	2840679	28AUG 79	28AUC 79	28AUG 79	28AUG 79	75EP79						75 EP 79	75.075	75 EP 79	1354
		MILE	325.0	325.0	35.0	362.0	0.026		0000	0000	330.0	965	330-0	2000				00000	0.00	0000	2000	2000	200		330		330.0	2000	0.00	•	0000		0000	3.00	93.5	335.0	335 0	335.0	335.0	335.0	335.0	335 .0	335.0	335 00	335.0	335 .0	335.0	335 .0	÷	•	0.000

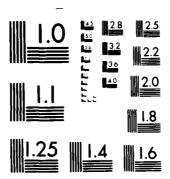
ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAHINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- WHEELER RESERVOIR, ALABAMA TASK 1 - GOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

		REMARK				. D.												2	•																									#.0°				
	Z Z	(06/6)	3.2	11.3	6.7	7.3	•	•	•	•	•	•	•	•	•	•	•	•	٠,	•	•	•	•	•	•	9.0	•	•	•	•	•	• ;	•	•	•	•	• •	1.2	•	•	•	•	•		•	•	• •	
FISH, UG A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(0/3n)	3.2	11.3	••	7.3	•	•	•	•	•	•	0	•	•	•	•	•		; •	•	•	•	•	•	0.0	•	•	•	•	•	• [	•	•	•	•	• •	1.2	•	•	•	•	•		•	•	• •	1
	19/31		97.0	7	0.59	1.76	•	•	•	•	•	•	0.0	•	•	•	•	•	.0		•	•	•	•	•	0.43	•	•	•	•	•	0.03	•	•	•	•	• •	0.35	•	•	•	•	•	0.30	•	•	••	,
MEASURED IN	5/ 341 340	0.0	0.22	0.73	0.10	0.46	•	•	•	•	•	•	10.0 >	•	•	•	•	•	. 6	•	•	•	•	•	•	90.0	•	•	•	•	•	0.01	•	•	•	•	• •	01.0	•	•	•	•	•	0.10	•	•	• •	,
OF 001	19/9/	4.4	1.18		16.0	2.91	•	•	•	•	•	•	0.0	•	•	•	•	•		•	, ,		•	•	•	0.19	•	•	•	•	•	0.0	•	•	•	•	•	0.51	•	•	•	•	•	0.15	•	•	• •	,
RATIONS	19/5/11/000	0,0	0.74	1.98	0.27	1.45	•	•	•	•	•	•	< 0.02	•	•	•	•	•		•	, ,		•	•	•	< 0.02	•	•	•	•	•	0.02		•	•	•	• •	0.12	•	•	•	•	•	0.08	•	•	• •	ì
CONCENTRATIONS OF	(3/3/1/400	9.4	0.22	0.73	0.02	0.45	•	•	•	•	•	•	< 0.02	•	•	•	•	•	. ?		, ,	. •	•	•	•	0.12	•	•	•	•	•	20.0	•	•	•	•	• ,	0.03	•	•	•	•	•	0.08	•	•	• •	,
;			0.14	0.23	< 0.02	0.29	•	•	•	•	•	•	< 0.02	•	•	•	•	•			, ,	. •	•	•	•	< 0.02	•	•	•	•	•	•0.0	•	•	•	•	• .	60.0	•	•	•	•	•	0.02	•	•		,
	110105	3	0.14	0.33	0.26	0.26	•	•	•	•	•	•	0.15	•	•	•	•	•	•		•	•	•	•	•	0.17	•	•	•	•	•	0.16	•	•	•	•	•	1.27	•	•	•	•	•	1.74	•	•		,
:	- 5		0.86	80	m		m		m			21.0						30.0	•	75.0		_			_						0.0		90.06	~	~	0.0	-		160.0	_	~	~	1900	-	•	•	• •	
		Œ 5	80	840	240	•	116	100	100	95	105	80	•	178	160	671	971	<b>5</b> 0	•	204	*0	950	460	692	780	•	122	68	83	76	2 0	741	510	890	1360	210	220	•	1000	990	730	1200	1290	•	148	120	302	
	FNCT	( MM )	370	372	248	•	168	3	9 1	155	150	153					2		•	320	3.25	385	312	348	369	•	173	140	255	257	122	3 '	360	94	205	352	2 6	; •	390		358		439				252	
		SPEC 1E S	L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	3L UEG 1.LL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL		¥ :	<u>ک</u>	WHITE CRAPPLE	¥ ;	WHITE CRAPPIE	MITTE CARPTE	BASS	*		L.M. BASS	L.M. BASS	L.M. BASS	L.M. BASS	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	81 UFG 11 1	·	. CATFIS	. CATF1S	C. CATFISH	CATEL		S.M. BUFFALD	S.M. BUFFALD	S.M. BUFFALO	S.H. BUFFALO	S.M. BUFFALD	S.M. BUFFALD	-	22	GIZZARO SHAD	•
		LABIU	1-1380	1-138E	1-138F	1-134							1-074						450-1	•						1-09 E						1-075	•					1-050	! !					1-051				
		647	SLI	SLI	26.1	115							SLI						-	;						SLI						1						SLI	,					SLI				
		3	4	5-5	4	50	<b>6-1</b>	9-5			7	\$-6	9		4-5		-			2 5	5-2	5-3	1	5-5	5-6	5	6-1	9-5	6-3	7	?	֓֞֝֟֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	]	1-2	1-3	1 1	1	0	2-1	2-7	2-3	Į.	? ;			7-5	<u>1</u>	
		DATE	75 EP 79	75EP79	75EF 20	75EP79	7SEP 74	13EP 28	7SE 79	75EP75	75EP 79	7SEP79	756P 79	65EP70	6SEP 79	0257	OSEPTY	62EF 79	4 C E B 70	65 EP 79	65EP79	6SEP79	65 EP 79	6SEP79	6SEP 79	65 EP 79	6SEP 79	6SEP 79	6SEP79	6SEP79	0257	ASEP 19	24SEP 79	24SEP 79	24SEP 79	245EP79	2426970	24SEP 79	245EP 79	24SEP 79	24SEP 79	24SEP79	ZASEP 79	245EP79	•	•	• •	,
		PILE	335 .0	335.0	335.0	335 0	335.0	335.0	335°C	335.0	335 0	335.0	335.0	340.0	340.0	340.0	000	340.0	946	340	340 0	340.0	340.0	340 00	340.0	340.0	340.0	340.0	340.0	340 0							9 6	9	Q	0		o (			345.0	\$	345 00	

TASK 1 - DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION MUNICALE SPRING SRANCH. INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- WHEELER RESERVOIR, ALABAMA

	REMARK																	<b>1</b> 0.										•																						
	DDTR HAX (UG/G)	•	•	1.6	•	•	•	•	•	•	0.1	•	•	•	•	•	•	1.5	•	•	•	•	•	•	0.1	0.8	6.0	1.2	0.	. O	7.6	7.1	• 1	• •	•	•	•	0.5	•	•	•	•	•	•	0.2	•	•	•	• •	•
F ISH, UG/6	HIN (UG/G)	•	•	1.5	•	•	•	•	•	•	0.1	•	•	•	•	•	•	1.5	•	•	•	•	•	•	0.0	0.8	6.0	1.2	0.1	8 ° 0		7.1	• '	• (	•	•	•	0.5	•	•	•	•	•	•	0•2	•	•	•	• (	•
Z	3 4	•	•	0.75	•	•	•	•	•	•	0.03	•	•	•	•	•	•	0.36	•	•	•	•	•	•	< 0.01	0.19	0.27	0.37	0.24	0 • 2 5	11.	8	• 1	• •	•	•	•	0.27	•	•	•	•	•	•	0-11	•	•	•	• •	•
MEA SURED	00E (UG/	•	•	8	•	•	•	•	•	•	0.01	•	•	•	•	•	•	o 08	•	•	•	ð	•	•	< 0.01	01.0	0.10	0.11	0.12	0.12		61.0	• •		•	•	•	0.07	•	•	•	•	•	•	0.02	•	•	•		,
OF 001	-000 (UG/G)	•	•	0 •62	•	•	•	•	•	•	0.03	•	•	•	•	•	•	69.0	•	•	•	•	•	•	•05	0.25	0.38	0.58	0-22	0.15	2.0	7 . 0	• •	•	•	•	•	60.0	•	•	•	•	•	•	0.05	•	•	•	• •	•
CONCENTRATIONS	1	•	•	< 0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.24	•	•	•	•	•	•		0.08		0.11		20°0 >	91.0	61.0	• •	• •	•	•	•	0.03	•	•	•	•	•	٠	< 0.01	•	•	•	. •	•
CONCENT	007 (UG/G) 0.P P.P	•	•	90.0 >	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	900	•	•	•	•		٠	< 0.02	0.0	0 0	0.03	0 •23	0.11	200	600	•	•	•	•	•	0.03	•	•	•	•	•		0.03	•	•	•		
ł		•	•	0.05	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.03	•	•	•	•	•	•	< 0.02	0.11		0°0 >	0.10	0.18	0.03	0.0	•		•	•	•	0.03	•	•	•	•	•	•	0.02	•	•	•		•
	LIP105	•	•	69.0	•	•	•	•	•	•	0.05	•	•	•	•	•	•	0.12	•	•	•	•	•	•	0	4.8	2.5	4.9	3.0		71.6	•	• •		•	•	•	1.30	•	•	•	•	•	•	0.17	•	•	•	• •	
	F1LET WT• (G4)	•	•	•	34.5	33.0	30.5	39.0	34.0	33.0	•	135.0	58.0	61.0	0.64	34.0	43.0	•	43.0	41.0	0.00	30.0	42.0	32.5	•	110.0	10000	120.0	175.0	35.0	0.0	• 69.	125.0	110-0	110.0	65.0	110.0	•	0.99	43.0	0.0	43.0	4	43.0	•	0 0		2000	35.0	
	T	168	82	•	109	210	120	145	136	120	•	875	473	225	330	258	748	•	200	165	195	110	160	160	•	1145	1125	1210	1725	325	1 5 10	1 2 3 6	1030	1150	1000	540	965	•	530	330	300	380	260	320	•	630	017	130	170	•
	LENGTH (MM)	245	211		203							358	315	262	289	291	225	•	184	195	193	160	185	198	•	471	516	4 10	554	313	232	• 66.7	4 20	418	717	334	397	•	325	290	275	315	592	<b>2</b>	•	9 5	797	600	245	4
	SPECIES	YH S	SHA		CRAPP		44	E CRAPPIE	IE CRAPPIE	E CRAPPIE	E CRAPPIE	_	BAS	BAS	BAS	YS	~			<b>61 LL</b>	61LL	7719	GILL	-	9115	CATFISH	CATFISH	CATFISH	CATFISH	ATFISH	CATFISH	1400110	D I SE N A I	RUFFAI		BUFFAL	, BUFFAL	BUFFAL						E BASS	E BASS	CRAPPI			E CRAPPIE	
	o,	2719	6122	6122	ZTITE	H I	III.	1 1 T	WH1 TE	ATITE	HH1TE	, X	H.	Y.	H.	Ŧ.	, ,		BLU6	arue Bra	e Lue	8606	91.05	BLUE	9.	ئ	ٔ ن	ڻ ر	-	٠,	. د	֓֞֞֞֜֞֞֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֡֓֡֓֡֓֡			N. H.	N. N	S.H.	Ser	WHITE	WHITE	WHI TE	WH 1TE	THI.	I	## 17E	T T T			THE STATE OF THE S	
	19810			1-163							1-077							1-01							1-07	1-05 64	1-0568	1-0560	0950-1	1-05 66	100-1	000-1						1-05/							1-150					
	L A8			SLI							SLI							S L 1							SLI					SLI								51.1							SLI					
	F 10	•	•	٠	•	4	4	4	4	•	J	•	8	3	8	S				•			6-5			1-1			٠,		9 8			1 ~	~	~	~	ပ		3	•	٠,	~	~	U		7 1	1	•	
	DATE	•			7SEP 79	75EP 79	75EP 79	7SEP 79	75EP 79	7SEP 79	75EP79	7SEP 79	75EP 79	15th 19	75EP79	7SEP79	7SEP 79		7SEP 79			_	_	_			27SEP 79		275	27SEP79	2755070	21 25 C C	2756979	2755779	27SEP79	27 SEP 79	27SEP 79	27SEP 70	2456079	24SEP79	245EP79	4SEP7	å.		45677	245EP79	2455679		4	
	TILE	345.0	345.0	345.0	345 00	345.0	345.0	345 •0	345.0	•	345.0	345 .0	345.0	345.0	345.0	345.0	345 0	345.0	345.0	345.0	345.0	345.0	345 °C	345 .0	345.0	345.0	345.0	345.0	345.0	345.0			365.0		345.0	345.0			350 00		350.0			000	2000	2 3	2		2000	





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS 1963 A

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS --- WHEELER RESERVOIR, ALABAMA TASK 1 - 301 LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEFLER, AND GUNTERSVILLE RESERVOIRS

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	MAX		•	0.0	•	•	•	•	•	•	0.1	•	•	•	•	•	•	<b>9.</b> 0	•	•	•	•	•	•	0.3	•	•	•	•	•	• (	7.0	•	• •	•	•	•	0.0	•	•	•	•	•	•		•	•	•	•	•	•
FISH, UG/G	MIN MIN		•	•	•	•	•	•	•	•	0.0	•	•	•	•	•	•	<b>••</b> 0	•	•	•	•	•	•	0.2	•	•	•	•	•	• ;	1.0	•	• (	•	•	•	0.0	•	•	•	•	•	•	9	•	•	•	•	•	•
	- (9/9n		•	< 0.01 <	•	•	•	•	•	•	0.0	•	•	•	•	•	•	0.16	•	•	•	•	•	•	90.0	•	•	•	•	•	•	0.13	•	•	•	•	•	0.25	•	•	•	•	•	• ;	60	•	•	•	•	•	•
MEASURED IN	00E(UG/G)	Š	•	0.01	•	•	•	•	•	•	10.0 >	•	•	•	•	•	•	0.07	•	•	•	•	•	•	< 0.01	•	•	•	•	•	•	0.01	•	•		•	•	0.13	•	•	•	•	•	•	0°0 V	•	•	•	•	•	•
OF 00T	- (9/9n		•	0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.20	•	•	•	•	•	•	0.11	•	•	•	•	•	•	20.0 >	•	•	• •	•	•	0.08	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•
CONCENTRATIONS	(9/90) 000	5	•	20°0 >	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	90.0	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	Z0°0 >	•	•	• •	•	•	< 0.02	•	•	•	•	•	•	% °° °°	•	•	•	•	•	•
CONCENT	65/501 t00		•	20°0 >	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.0	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	20.0 >	•	•	• •	•	•	< 0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•
Ī	-	5	•	< 0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	0.05	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•	× 0.02	•	•	• •	•	•	< 0.02	•	•	•	•	•	•	< 0.02	•	•	•	•	•	•
	LIPIOS	3	•	0.05	•	•	•	•	•	•	0.24	•	•	•	•	•	•	2.45	•	•	•	•	•	•	0.22	•	•	•	•	•	•	5.37	•	•	. •	•	•	3.57	•	•	•	•	•	•	0.24	•	•	•	•	•	•
	FILET WT.	2	34.0	•	30.0	26.0	35.0		34.5	30.5	•	3	45.0	55.0	55.0	45.0	35.0	•	58.0	54.0	52.0		-	190.0	•	8				,	190.0					330.0	250 00	•	55.0					2.00				2 5	300	39.00	2
	H 30	Ė	160		170	120	9	110	140	120	•	200	465	435	475	670	200	•	24	200	550	430	1485	1130	•	8	460	180	390	400	1250	• 666	200	2000	1 540	2490	2150	•	315	250	455	220	1110	1720	• (	2	001			171	ò
	LENGTH	<u>ר</u>	230		185	190	8	170	185	160	•	352	346	345	350	360	357	•	8	315	310	305	461	417	٠	325	375	280	345	360	3	• 67	44		9	25	50%	•	<b>%</b>	566	754	262	<b>4</b> 0	17	• (	157	174	6	2	101	7 20
	0000	Sectes	CRAP	WHITE CRAPPIE	9LUF6 ILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	BLUEGILL	=	CATF 1	BLUE CATFISH	CATF	CATFI	CATF	CATFI	L.M. BASS						L.M. BASS	C. CATFISH	C. CATFISH	٠	. CATFIS	. CATF 1S	•	TFIST		PILER	RUFFA	S.M. BUFFALO	BUFF	BUFF		_		_	L.M. BASS	_	L.M. BASS	BLUEGILL	BLUEGILL	BLUEGICE	┛.	BLUE 61 LL	פרחבתו רר
		L 4 5 1 0		1-16*							1-13>							1-058							1-059						•	1-060						1-061						,	1-062						
	•	r S		SLI							SLI							SLI							SLI							SLI						SLI							SL1						
	5	2		U				•	Ф		50	1-1	1-2	1-3	1	1-5	9-1	5	ď	••	27	8	5-5		J	~	~	-	~	-	_		4 6	4 ^	۰ ۸	2-5	9	J	•	2-5	5-3	•	S.		_	•	۰ م	1	0 4		0
	7		245EP 79	245EP79	24SEP74	245EP 79	Z 4SEP 79	24SEP79	24SEP79	24SEP 79	24SEP79	275EP79	275EP79	27SEP 79	27 SEP 79	27SEP79	27SEP79	27SEP79	27SEP79	275EP79	275EP79	27SEP79	27SEP79	27SEP79	27SEP79	20C1 73	20CT 79	20C179	20CT 79	2007	200779	2007 79	20179	20173	20CT 79	20CT 79	2001	200179	20CT 79	20CT 79	20CT79	20CT 79	20C179	200179	20CT 79	20CT 79	200779	25.5	2000	2001	3
	2	176	350.0		920	950.0	990	350 00	350.0	350.0	350.0	350.0		350.0			350 00	350.0	350.0	350.0			350.0	350.0	350.0	375.0	375.0	3.0°	32.8	375.0	375.0	375.0	200	24.6	375.0	375.0	37.8	375.0	375.0	375.0	375.0	3. T.	375.0	375.0	375.0	375.0	375.0	27.50	2/2	378	

# WHEELER RESERVOIR, ALABAMA ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS --- WHEE

TASK 1 - DDT LEVELS IN IMPORTANI FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

DATE FID LAB LABID SPECIES (WH) (GH) (R1) (GP) Pr) 0.00 (UG/C) — DDD (									;		3	-CONCENTRATIONS OF	1 T 10NS	50	MEASURE	INFI	MEASURED IN FISH , UG/G-	, 5	
1-06   BLUEGILL   1-06   BLU	E			L AB	LABID	· ·	LENGTH (MM)	F 3			001101			16/6)	0,0	1	(9/9)	MAX (06/6)	REHARK
C. CATFISH	2	2	Ž.	211	1-063	BLUEGILL	•	•	•	0.16 <	0.02			> 000	10.0	90	9	1.0	
1-2   C. CATFISH   405   550   72.0	3	2	1-1	1	•	C. CATFISH	ž.	1250	96.0	•	•			•	•		•	•	
11-3	Ž	٤	1-2				<b>\$</b>	650	72.0	•	•	•	•	•	•	•	•	•	
C. CAFISH C. CAFISH S. Subfract S. Subfrac	3	2	1-3				570	1 970	154.0	•	•	•	•	•	•	•	•	•	
C. CAFFISH 359 310 600 C. CAFFISH 359 310 600 C. CAFFISH 359 310 600 C. CAFFISH 350 410 70.0 C. CAFFISH 350 410 70.0 C. CAFFISH 359 310 600 C. CAFFISH 369 1690 C. CAF	ž	2	1				940	450	45.0	•	•	•	•	•	•	•	•	•	
Composition of the control of the co	ş	2	?				350	410	0.0	•	•	•	•	•	•	•	•	•	
2-1 S.M. BUFFALO 465 1830  2-2 S.M. BUFFALO 465 1830  2-3 S.M. BUFFALO 465 1830  2-4 S.M. BUFFALO 465 1830 1800  2-5 S.M. BUFFALO 465 1830 1800  2-6 S.M. BUFFALO 465 1830 1800  2-7 S.M. BUFFALO 465 1830 1800  2-8 S.M. BUFFALO 465 1830 1800  2-9 S.M. BUFFALO 460 1830 1800  2-1 S.M. BUFFALO 460 1830 1800  2-1 S.M. BUFFALO 460 1800  2-1 S.M. BUFFALO 460 1800  2-2 S.M. BUFFALO 460 1800  2-3 S.M. BUFFALO 460 1800  2-4 S.M. BUFFALO 460 1800  2-5 S.M. BUFFALO 460 1800  2-6 S.M. BUFFALO 460 1800  2-7 S.M. BUFFALO 460 1800  2-8 S.M. BUFFALO 460  2-9 S.M. BUFFALO 460  2-1 S.M. BUFFALO 460  2-1 S.M. BUFFALO 460  2-1 S.M. BUFFALO 460  2-1 S.M. BUFFALO 460  2-2 S.M. BUFFALO 460  2-3 S.M. BUFFALO 460  2-4 S.M. BUFFALO 460  2-6 S.M. BUFFALO 460  2-7 S.M. BUFFALO 460  2-8 S.M. BUFFALO 460  2-9 S.M. BUFFALO 460	ž	139	9-1			C. CATFISH	355	370	60.0	•	•	•	•	•	•	•	•	•	
2-3 5.4% BUFFALO 455 1360 160.0 2-4 5.4% BUFFALO 455 1370 190.0 2-5 5.4% BUFFALO 450 1300 160.0 2-6 5.4% BUFFALO 450 1300 150.0 2-7 5.4% BUFFALO 450 1300 150.0 2-8 5.4% BUFFALO 450 1300 150.0 2-9 1.4% BASS 395 400 170.0 2-1 1.4% BASS 395 40.0 2-1 1.4% BASS 395 4	ក្ត	_	7-7			S.M. BUFFALO	465	1630	•	•	•	•	•	•	•	•	•	•	
2-3 5.44. BUFFALO 455 1300 160.0 2-4 5.44. BUFFALO 465 1300 150.0 2-5 5.44. BUFFALO 460 1300 150.0 2-6 5.44. BUFFALO 460 1300 150.0 2-6 5.44. BUFFALO 460 1300 150.0 2-6 5.44. BASS 406 1140 135.0 2-7 1.44. BASS 340 400 175.0 2-7 2-7 2-7 2-7 2-7 2-7 2-7 2-7 2-7 2-7	8		7-7			S.M. BUFF ALO	\$	1830	•	•	•	•	•	•	•	•	•	•	
2-4 S.M. BUFFALO 485 1730 190.0  2-6 S.M. BUFFALO 490 1630 160.0  2-7 S.M. BUFFALO 490 1800 180.0  2-8 S.M. BUFFALO 490 1800 180.0  2-9 S.M. BUFFALO 490 1800 180.0  2-1 L.M. BASS 262 270 31.0  2-1 L.M. BASS 390 400 70.0  2-2 L.M. BASS 390 400 70.0  2-3 L.M. BASS 390 400 70.0  2-4 L.M. BASS 390 400 70.0  2-5 L.M. BASS 390 400 70.0  2-6 L.M. BASS 390 400 70.0  2-7 L.M. BASS 390 400 70.0  2-8 L.M. BASS 390 400 70.0  2-9 BLUEGILL 161 100 20.1  2-1 BLUEGILL 152 83 30.2  2-1 BLUEGILL 150 130.0  2-1 BLUEGILL 150	ä		2-3			S.M. BUFFALO	455	1360	160.0	•	•	•	•	•	•	•	•	•	
2-5 5.W. BUFFALD 440 1300 1500 6.05 5.M. BUFFALD 440 1300 1500 6.05 5.M. BUFFALD 440 1300 1500 6.05 5.M. BUFFALD 6.06 1300 1500 6.07 5.M. BUFFALD 6.07 5.M. BUFFALD 6.07 5.M. BUFFALD 6.07 5.M. BUFFALD 6.07 6.07 6.07 6.07 6.07 6.07 6.07 6.07	ဗ္ဗ	179	7,				485	1730	1%0	•	•	•	•	•	•	•	•	•	
S-6   S-M. BUFFALO   S-M. BASS	ຼັ	2	? ?				490	1630	160.0	•	•	•	•	•	•	•	•	•	
COM SLI 1-064 S.M. BUFFALO  L.M. BASS	ä	2	9-2				044	1300	150.0	•	•	•	•	•	•	•	•	•	
5-1 L.M. BASS 262 240 31.0 5-2 L.M. BASS 406 1140 175:0 5-3 L.M. BASS 394 400 79.0 5-4 L.M. BASS 395 400 130.0 5-5 L.M. BASS 395 400 130.0 5-6 L.M. BASS 395 40.0 5-7 L.M. BASS 395 40.0 5-8 L.M. BASS 295 40.0 5-9 BLUEGIL 167 100 20.1 6-1 BLUEGIL 156 100 31.0 6-1 BLUEGIL 156 100 31.0 6-1 BLUEGIL 156 100 31.0 6-2 BLUEGIL 156 100 31.0 6-3 BLUEGIL 156 100 31.0 6-4 BLUEGIL 190 121 30.9 6-5 GIZARD SMAD 254 100 7-1 GIZARD SMAD 254 100 7-2 GIZARD SMAD 254 155 6-1 GIZARD SMAD 254 155 6-1 GIZARD SMAD 254 155 7-6 GIZARD SMAD 254 155 7-6 GIZARD SMAD 254 155 7-7 GIZARD SMAD 254 155 7-8 GIZARD SMAD 254 155 7-9 GIZ	ଧ	2	5	SLI	1-064		•	•	•	1.41	0.12	0.18	0.0	0.05	90.0	0.12	9.0	••	
5-2	ä	2	1-6				292	240	31.0	•	•	•	•	•	•	•	•	•	
5-3 L.M. BASS 339 490 79:0 5-4 L.M. BASS 362 665 110:0 5-5 L.M. BASS 253 245 40.0 5-6 L.M. BASS 253 245 40.0 6-1 L.M. BASS 253 245 40.0 6-2 BLUEGILL 160 100 20:1 6-3 BLUEGILL 150 20:1 6-4 BLUEGILL 150 20:1 6-5 BLUEGILL 150 20:1 6-6 BLUEGILL 150 20:1 6-7 BLUEGILL 150 20:1 6-8 BLUEGILL 150 20:1 6-9 BLUEGILL 150 20:1 6-1 BLUEGILL 1	Ž	2	2-5				<b>4</b> 06	1140	175.0	•	•	•	•	•	•	•	•	•	
5-4 L.M. BASS 365 1700 130.0	ב	2	S.				33	\$	0.0	•	•	•	•	•	•	•	•	•	
5-5 L.M. BASS 362 665 110.0	ទ	2	1				363	700	130.0	•	•	•	•	•	•	•	•	•	
COM SLI 1-065 L.M. BASS COM SLI 1-066 BLUEGILL COM SLI 1-067 GIZZARD SHAD COM SLI 1-067 GIZZARD	ב	_	ř			L.M. BASS	362	665	110.0	•	•	•	•	•	•	•	•	•	
COM SLI 1-065 L.M. BASS  6-1  BLUEGILL 167 20.1  6-2  BLUEGILL 150 20.1  6-3  BLUEGILL 150 20.1  6-4  BLUEGILL 150 100 20.1  6-5  BLUEGILL 150 100 31.0  6-5  BLUEGILL 150 100 31.0  6-5  BLUEGILL 150 100 31.0  6-5  BLUEGILL 150 121 30.9  6-6  COM SLI 1-066 BLUEGILL 190 121 30.9  7-1  GIZZARD SHAD 254 100  7-2  GIZZARD SHAD 255 170  7-3  GIZZARD SHAD 256 255  7-4  GIZZARD SHAD 256 256  7-5  GIZZARD SHAD 256 256  7-6  GIZZARD SHAD 256 256  7-7  GIZZARD SHAD 256 256  7-8  GIZZARD SHAD 256 256  7-8  GIZZARD SHAD 256 256  7-9  GIZZARD SHAD 256 256  7-6  GIZZARD SHAD 256 256  7-6  GIZZARD SHAD 256 256  7-7  GIZZARD SHAD 256 256  7-8  GIZZARD	ឱ		4			L.M. BASS	253	245	ç Ç	•	•	•	•	•	•	•	•	•	
6-1 BLUEGILL 167 100 20.1	ä		5	SLI	1-065	L.M. BASS	•	•	•					0.02 <	0.01 ×	10.0	0•0	1.0	
6-2 BLUEGILL 161 100 20.1 6-3 BLUEGILL 156 100 31.0 6-5 BLUEGILL 156 100 31.0 6-5 BLUEGILL 156 100 31.0 6-6 BLUEGILL 157 100 31.0 6-7 BLUEGILL 158 100 17-1 GIZZARD SHAD 254 100 7-3 GIZZARD SHAD 254 155 6-7 GIZZARD SHAD 254 155 7-5 GIZZARD SHAD 254 155 7-5 GIZZARD SHAD 254 155 7-5 GIZZARD SHAD 254 155 7-6 GIZZARD SHAD 256 100 7-7 GIZZARD SHAD 257 100 7-8 GIZZARD SHAD 258 255 7-6 GIZZARD SHAD 258 250 7-7 GIZZARD SHAD 258 250 7-8 GIZZARD 258 250 7-8	ĕ	٤	6-1			BLUEGILL	167	00	20.1	•	•	•	•	•	•	•	•	٠	
6-3 BLUEGILL 156 100 20.1	Š	2	9-5			BLUEGILL	3	205	20.5	•	•	•	٠	•	•	•	•	•	
6-4 BLUEGILL 156 100 31.0 6-5 BLUEGILL 190 121 30.9 6-5 BLUEGILL 190 121 30.9 6-7 BLUEGILL 190 121 30.9 7-1 GIZZARD SMAD 254 100 7-2 GIZZARD SMAD 259 170 7-3 GIZZARD SMAD 240 155 7-4 GIZZARD SMAD 240 155 7-5 GIZZARD SMAD 240 155 7-6 GIZZARD SMAD 240 250 7-7 GIZZARD SMAD 240 155 7-8 GIZZARD SMAD 256 200 7-9 GIZZARD SMAD 256 200 7-0 GIZZARD SMAD 256 200 7-1 GIZZARD SMAD 256 200 7-2 GIZZARD SMAD 256 200 7-3 GIZZARD SMAD 256 200	ပ္က	3	6-3			BLUEGILL	191	100	20.1	•	•	•	•	•	•	•	•	•	
6-5 BLUEGILL 192 83 30.2 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	ក្ត	2	10			<b>BLUEGILL</b>	156	8	31.0	•	•	•	•	•	•	•	•	•	
6-6 BLUEGILL 190 121 30.9 0.02 < 0.02 < 0.02 0.01 0.03 0.0 0.1 0.1 0.01 0.01 0.01 0.	ä	2	Ç			BLUEGILL	152	63	30.2	•	•	•	•	•	•	•	•	•	
COM SLI 1-066 BLUEGILL 7-1 61ZZARD SHAD 254 100 7-2 61ZZARD SHAD 259 170 7-3 61ZZARD SHAD 240 150 7-4 61ZZARD SHAD 256 200 7-5 61ZZARD SHAD 296 200 7-6 61ZZARD SHAD 296 200 61ZZARD SHAD 296 200 7-6 61ZZARD SHAD 296 200 61ZZARD SHAD 296 200 7-6 61ZZARD SHAD 296 200 7-6 61ZZARD SHAD 296 200 7-7 61ZZARD SHAD 296 200 7-8 61ZZARD 296 200 7-8 61	ž	_	9			BLUEGILL	2	121	30.9	•	•	•	•	•	•	•	•	•	
7-1 GIZZARD SHAD 254 100	ក្ត		5	SLI	1-066	BLUEGILL	•	•	•	0.34 <	\$ 0.02 <	0.02	0.02 <	0.02	000	0.03	0.0	0.1	
7-2 GIZZARD SHAD 255 170	ဋ	2	7-1				254	00	•	•	•	•	•	•	•	•	•	•	
7-3 GIZZARD SHAD 250 160	ጆ	7	7-5				255	170	•	•	•	•	•	•	•	•	•	•	
7-4 GIZZARD SHAD 282 255	Ş	2	-1				250	160	•	•	•	•	•	•	•	•	•	•	
7-5 GIZZARD SMAD 282 255	ទ្ច		1				244	155	•	•	•	•	•	•	•	•	•	•	
7-6 G12ZARD SHAD 256 200 2.80 < 0.03 < 0.03 < 0.02 < 0.02 < 0.07 0.1 0.2	ភ្ជ		4				282	255	•	•	•	•	•	•	•	•	•	•	
CDM SLI 1-067 GIZZARD SHAD 2.80 < 0.03 < 0.03 < 0.02 < 0.02 < 0.07 0.1 0.1	ទ	2	7				256	200	•	•	•	•	•	•	•	•	•	•	
	ž	130	5	SLI	1-067		•	•	•	2.80 <	~	0.03	0.03	. 0.02 <		0.07	0.1	0.2	M.O. 1

FOOTWOTES:
Absence of data for individual samples indicates analyses were performed on the composite of the individual samples absence of data for indicates the sample was a partial fillet preserved with dry ice,
The abbreviation (N.S.) indicates that no sample was collected,
The abbreviation (O.D.) indicates questionable dot data.
The abbreviation (O.D.) indicates sample is a merged value (value reported is the average of two analyses). ..

SLI = STEMART LABGRATORY INC., LPA = ENVIRONMENTAL PROTECTION AGENCY. 

INTERLAB COMPARISONS INDICATED THESE DATA WERE MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERD. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE. A NUMBER "1" INDICATES THESE SAMPLES WERE ORIGINALLY PREPARED BY SLI FOR ANALYSIS ON 12-12-79. INTERLAI LOWER THAN EPA DATA. REFER TO QUALITY ASSURANCE DOCUMENT FOR DETAILS.

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPHING PRANCH, INDIAN CREEK, AND ADJACENT LANDS AND NATERS -- WHEELER RESERVOIR, ALABAMA

TASKI (MODIFIED) - WHOLE BOOY DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS	CONCENTRATIONS OF DOT MEASURED IN FISHIMHOLE)
SPECIES	
F 1SH	19
IMPORTANT	4
2	
LEVELS	
100	
P 00 Y	
MHOLE	
- (0:	
TASKI (4001FIE	

REMARK					<b>48.5</b>	· •	<b>H</b>
, in			7.		##### 3.5.5.5.5	###### 555757	7
DDTR MAX (UG/G)		5.4 13.8 23.2	418. 418. 519.7	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	w v o m 4 2 2 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		7 1 2 3 4 6 6 7 6 6 6 7 6 6 6 7 6 6 7 6 6 7 6 6 7 6
FISH (WHOLE)  TOTAL DOTR  MAIN MA  TUE/G) (UG/C)				0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0			
Z S				142.2 157.8 21.58 21.58 10.15 6.50 20.04 13.65			
F MEASURED				2.65 5.67 5.15 7.15 7.15 7.43 7.64 7.64			
106/6) —		2.98 7.63 13.03	20.84 B.64 214.6 259.7	255-7 296-7 376-79 346-83 112-70 12-30 23-71 23-71		4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0000
OLCENTRATIONS 39 6/6) Pop (UG,		0.78	2.39 60.01 86.74 5.92	95.01 92.19 10.86 10.86 3.61 11.15 8.03	00.00 00		0.19
ა ⊇		0.03	000000000000000000000000000000000000000	0.00	000000000000000000000000000000000000000		0.29
0.0				2.55 1.57 0.51 0.51 0.00 0.00 0.01	000000000000000000000000000000000000000		0.046
LIPIOS				11.05 4.21 1.52 1.53 2.15 2.06 2.06 2.06 2.06 2.06 2.06 2.06 3.06 3.06 3.06 3.06 3.06 3.06 3.06 3			
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ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION MEDICE SPRING BRANCH: INDIAN CREEK, AND ADJACENT LANDS AND MATERS -- MMEELER RESERVOIR, ALABAMA

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TASKI MOUTFIED) - WHOLE BOOY DOT LEVELS IN IMPORTANT FISH SPECIES THROUGHOUT WILSON, WHEELER, AND GUNTERSVILLE RESERVOIRS

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.E	MAX (UG/G)	20000
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	LABIU	14-26 14-27 14-28 14-29 14-29
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	F 10	\$\$\$\$\$ \$7.55
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FOOTINGTES:

WIGHE BOOY DOT AND LIPID VALUES WERE CALCULATED BY DETERMINING THE WEIGHTED AVERAGE OF THE INDIVIDUAL FILLET
VALUES FREY BOUSLY REPORTED) AND THE VALUES REASURED IN THE REMAINDER OF EACH FISH SPECIMEN.
REMARKS - FFC INDICATES THAT THE FILLET VALUE USED IN THE MHOLE BODY CALCULATION WAS FROM A COMPOSITE OF SEVERAL FISH.
ALL LESS THAN DETECTABLE WHEN BOTH THE SET TO ZERO FOR THE WHOLE BODY CALCULATIONS OF DOT. FOR THIS REASON ZEROS APPEAR
IN THE DATA TABLES WHEN BOTH THE FILLET AND SHAPLE REMAINDER COVCENTRATIONS ARE LESS THAN DETECTABLE.
A WINNER "I" INDICATES THESE SAMPLES WERE ORIGINALLY PREPARED BY SLI FOR ANALYSIS ON 12-12-79. INTERLAS COMPARISONS INDICATED THESE DATA WERE SIGNIFICANTLY LOWER THAN ETA DATA. REPER TO QUALITY ASSURANCE DOCUMENT FOR DETAILS.

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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS, WHEELER RESERVOIR, ALABAMA

## TASK 2

FISH POPULATION ESTIMATES AND DDTR CONCENTRATIONS IN YOUNG-OF-THE-YEAR FISH SPECIMENS OF INDIAN CREEK AND HUNTSVILLE SPRING BRANCH EMBAYMENTS OF WHEELER RESERVOIR

Tennessee Valley Authority Office of Natural Resources

August 1980

#### PREFACE

This document was prepared in support of the Envineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

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Fish Population Estimate Data								Appendix	В
Physical Data on Young-of-the-Year Fish Selected for DDTR Analysis								Appendix	С
DDTR Analysis Data for Young-of-the-Year Fi	ish	Sample	8					Appendix	D

C

TASK 2
WORKTASK DESCRIPTION

#### TASK 2

FISH POPULATION ESTIMATES AND DDTR CONCENTRATIONS IN YOUNG-OF-THE-YEAR FISH SPECIMENS OF INDIAN CREEK AND HUNTSVILLE SPRING BRANCH EMBAYMENTS OF WHEELER RESERVOIR

### 1.0 Purpose

The purpose of this task was to: (a) determine the standing crop of fish species inhabiting coves in Indian Creek and Huntsville Spring Branch embayments, (b) determine the reproductive success of fish species in these areas, (c) develop a species list for Indian Creek and Huntsville Spring Branch embayments, and (d) collect young-of-the-year fish specimens from coves in Indian Creek and Huntsville Spring Branch embayments and other coves in Wheeler Reservoir for DDTR\* analysis.

# 2.0 Scope

Coves were sampled in Indian Creek, Huntsville Spring Branch and Wheeler Reservoir.

#### 3.0 Procedure

# 3.1 Fish Population Estimates

#### 3.1.1 Sampling Locations

Fish samples for population estimates were collected from the five areas shown on the navigation charts in Appendix A. Area 1, is a cove on Indian Creek. Area 2, is a cove on Huntsville Spring Branch. Areas 3, 4, and 5 are coves respectively located on Second Creek (TRM 275), Elk River (TRM 284), and at Lawrence County Park - Wheeler Reservoir (TRM 286).

<sup>\*</sup>DDTR - DDT isomers and metabolites.

## 3.1.2 Type of Sample

Cove Rotenone.

## 3.1.3 Field Collection and Sample Handling

- 3.1.3.1 The coves referenced in 3.1.1 were surveyed to determine their size in acres (see Appendix B).
- 3.1.3.2 Samples were collected before the water temperature dropped below  $70^{\circ}F$ .
- 3.1.3.3 Coves were closed with a block net at 5:00 p.m. one day and rotenone applied at a one mg/l concentration the following morning.
- 3.1.3.4 Fish were picked up two consecutive days and sorted into species by size classes. Each size class was counted and weighed.

  Weights were taken on first-day fish only with weights of second-day fish estimated from those of the first day except for sizes not collected the first day.

# 3.1.4 Data Analysis

Fish population estimate data are summarized in tables in Appendix B, in terms of weights and numbers per acre for all sizes and groups of fish.

# 3.2 DDTR Analysis of Young-of-Year

# 3.2.1 Sampling Locations

Young-of-year gizzard shad, largemouth bass, and bluegill were collected from cover in Elk River (Area 4), and Lawrence County Park-Wheeler Reservoir (Area 5), for DDTR analysis. Young-of-year gizzard shad and bluegill were collected from coves in Indian Creek (Area 1), and Huntsville Spring Branch (Area 2) for DDTR analysis. No largemouth bass were found in Indian Creek and Huntsville Spring Branch.

## 3.2.2 Type of Sample

Cove rotenone.

### 3.2.3 Sample Handling

Each of the species from each cove sampled under 3.2.1 were divided (if possible) into three separate aliquotes. The same approximate size range of fish were in each aliquote. The length and weight of each fish comprising each aliquot is presented in Appendix C. After collection each individual fish was wrapped in aluminum foil, properly labeled, and placed in polyethylene ziplock bags. Bags were placed on ice in the field and later transferred to a chest freezer in the laboratory.

# 3.2.4 DDTR Analysis

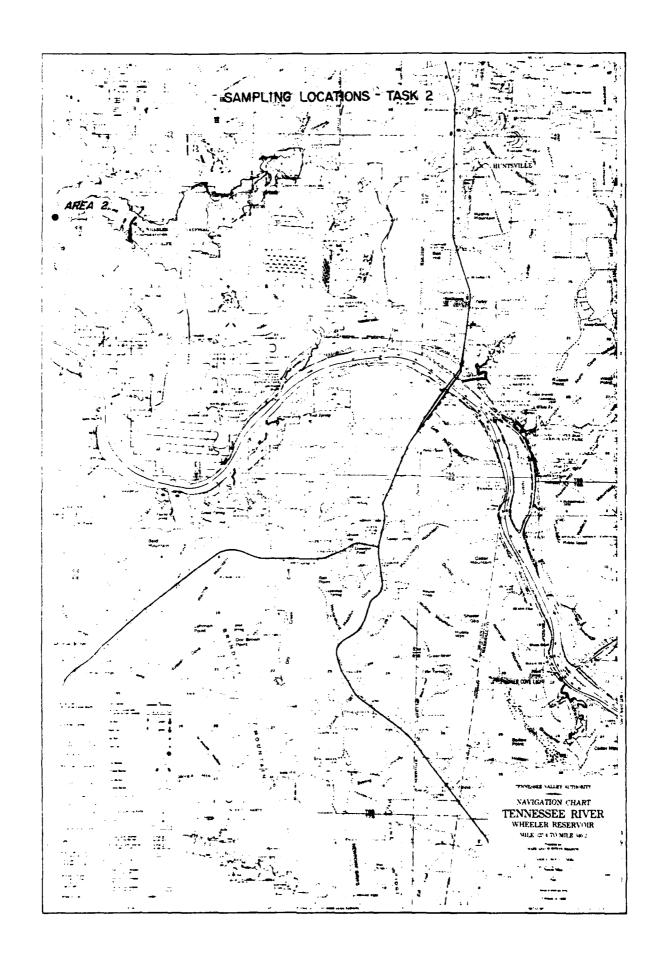
Each aliquot prepared under Section 3.2.3 was analyzed for DDTR according to procedures outlined in the Quality Assurance document. The analytical results of the DDTR analysis are presented in Appendix D.

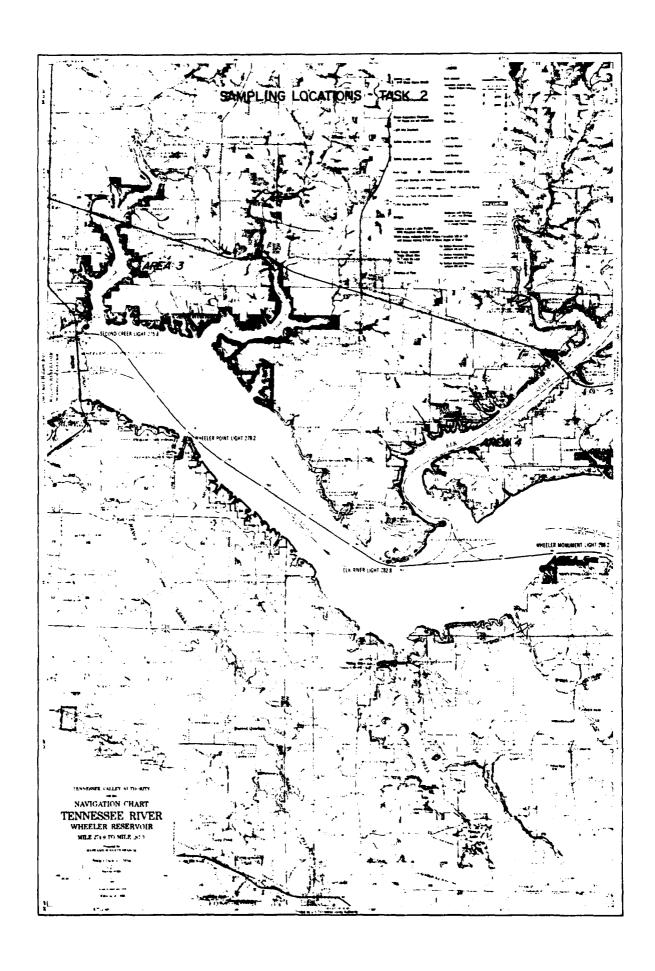
APPENDIX A

Task 2

Sampling Location Maps

SAMPLING LOCATIONS - TASK 2 THERE IS NOT THE OWNER. NAVIGATION CHART TENNESSEE RIVER
WHEELER RESERVOIR 3.4.





APPENDIX B

Task 2

Fish Population Estimate Data

TABLE 1. SAMPLE AREA LUCATIONS, WHEFLER RESERVOIR, 1979

SAMPLE	AREA	DATE		RIVER HILE	UNIVERSAL GRID CODE
AREA	1	SEPTEMBER	18	320.9	348656013054
AREA	2	SEPTEMBER	11	320.9	348656007058
AREA	2	SEPTEMHER	11	320 .9	348656007058

TABLE 2. STANDING CROP OF FISH BY SAMPLE AREA. WHEELER RESERVUIR. 1979

SAMPLE AREA	****SIZE***** HECTARES ACRES		MEAN DEPIH METERS FEET		NUMBER ( PER HECTARE	JF FISH PER ACRE	WEIGHT OF FISH KG/HA LR/AC	
AREA 1	0.1	0.4	0.3	1 •0	11400.0	4613.5	131.2	117.0
AREA 2	0.3	0.6	0.2	0.7	26704.0	10806.8	209.1	186.6
ALL AREAS	0.4	1.0	0.2	C .8	19052.0	7710-2	170.2	151.8

2.

TABLE 3. COMMON AND SCIENTIFIC NAMES OF FISH IN ROTEVONE SAMPLES, MHEELER RESERVOIR, 1979

COMMON NAME

SCRENTIFIC NAME

GAME

WARMOUTH
GREEN SUNFISH
BLUFGILL
LUNGEAR SUNFISH
REDFAR SUNFISH

LEPOMIS GULDSUS LEPOMIS CYANELLUS LEPOMIS MACROCHIRUS LEPOMIS MEGALOTIS LEPOMIS MICROLOPHUS

ROUGH

BOWFING GOLDFISH CARP SMALLMOUTH BUFFALD SPUTTED SUCKER BLACK BULLHEAD CHANNEL CATFISH

AMIA CALVA
CARASSIUS AURATUS
CYPPINUS CARPID
ICTIOBUS BUBALUS
MINYTRENA MELANOPS
ICTALURUS MELAS
ICTALURUS PUNCTATUS

### FUKAGE

GIZZAD SHAD
THREADEIN SHAD
STONERGLLER
GILDEN SHINER
EMERALD SHINER
CHMINN SHINER
GLACKFPOTTED TOPMINNOW
MOSOUITOFISH
PROOK SILVERSIDE
MIXED & JNID MINNOW

DDROSOMA CEPEDIANUM
DDROSOMA PETEMENSE
CA4POSTOMA ANDMALUM
NOTEM IGONJS CRYSULEUCAS
NOTROPIS ATHERINOIDES
NOTROPIS CORNUTUS
FUNDULUS OLIVACEUS
GAMBUSIA AFFINIS
LABIDESTHES SICCULUS

TABLE 4. SIZE CLASSES (MILLIMETERS) USED IN FISH INVENTORTES

SPECIES			HARVEST- ABLE
JAME WHITE BASS YELLOW BASS STRIPED BASS ROCK BASS BLUEGILL DTHER SJMFISH SMALLMOJTH BASS		151 200	::0. A.I.O. BMF
WHILE BASS	1-150	151-200	SOT WHO DAER
TELLUA BASS	1-150	151-200	501 AND DAFE
SIKIPEU BASS	1-1/5	1/6-3/5	376 AND BAE
(ULN 3A))	1-10	70-123	136 AND ONE
LUCGILL ITUCD CIMETEM	1-17	70-125	150 WWD GAEL
MALLUNITH RASS	1-100	101-200	JEO WAD OACH
POTTED BASS	1-100	101-200	201 AND DVC
ARGEMOUTH RASS	1-100	101-225	226 AND DWF
RAPPIF	1-75	76-175	176 AND DALF
SAUGER	1-200	201-275	276 AND DVI
MALLEYF	1-200	201-275	276 AND DVE
NOCK BASS DLUEGILL DTHER SJNFISH SMALLMOJTH BASS SPOTTED BASS ARGEMOJTH BASS CRAPPIE SAUGER VALLEYE			
RUJGH AMPREY PADDLEFISH GAR BUMFIN GKIPJACK HERRING LUDNEYF CARP GULDFISH GUFFALO CARPSJCKERS REDHORSES REDHORSES REDHORSES RULLE CATFISH GULHEADS	1-50	51-125	126 AND DVER
ADDLEFISH	1-400	301-450	451 AND BYER
AR	1-300	301-475	476 AND DVE
OWFIN	1-200	201-300	301 AND UVER
KIPJACK HERRING	1-150	151-275	276 AND OVER
LOONEYF	1-150	151-300	301 AND DEFE
ARP	1-200	201-300	301 AND UVER
OLDFISH	1-150	151-250	251 AND DVER
UF FAL (1	1-200	201-300	301 AND DVE
CARPSJCKERS	1-175	175-250	251 AND UVER
REDHOR SES	1 -1 75	176-250	251 AND DVE
THER SJCKERS	1-175	176-250	251 AND DVER
LUE CATFISH	1-125	125-225	550 AND DAFE
CHANNEL CATFISH	1-125	125-225	556 AND DAFE
BULLHEADS	1-100	101-175	226 AND DVER
LATHEAD CATFISH	1-125 1-125	126-275	276 AND UVER
BULLHEADS FLATHEAD CATFISH FRESHDATER DRUM FRASS PICKFREL	1-125	158-500	SOI AND DAFE
	1-175		301 AND OVER
FORAGE SIZZARD SHAD THREADEIN SHAU DRANGESPOTTED SUNFISH			
SIZZARD SHAD	1-125	-	159 VHD BAEL
THREADFIN SHAU	1-125	- 51-75	159 AND DAFE
DRANGE SPOTTED SUNFISH	1-50	51-75	76 AND UVER
HISC. FORAGE FISH	ALL SIZES	-	-

TABLE 5. AREA POPULATIONS FOR MAJOR FISH GROUPS . WHEELER RESERVOIR. 1979

	F I SH	NUMBER UF	MUMBER	OF FISH	WEIGHT DI	FISH
SAMPLE AREA	GRUUP	SPECIES	HECTARE	ACRE	KG/HA (	.BS/AC
ARFA 1						
	GAME	5	2406.7	974.0	12-2	10-9
	₹ DUGH	4	233.3	94.4	28.8	25.7
	FORAGE	7	8760.0	3545.1	90.1	80.4
		16	11400-0	4613.5	131-2	117-0
ARFA 2						
	GAMF	4	692.0	280.0	2.7	2.4
	4 3UGH	7	404.3	163.5	23.4	20.9
	FORAGE	5	25608-0	10363.3	183.0	163.2
		16	26704-0	10836 -8	209-1	186-6
ALL AREAS						
	SAME	5	1549.3	627.0	7.5	6.7
	3 BUG 4	7	318.7	129.0	26.1	23.3
	FURAGE	9	17184-2	6954.2	136-5	121.8
		21	19052-0	7710.2	170-2	151.8

TAPLE 6. SIZE DISTRIBUTION PER HECTARE, MHEELFR RESERVOIR, 1979

								!
SPECIFS	_YDUNG OF	YEAR WEIGHT	INTERMEDIATE NUMBER WEIGHT	HEI CHT	NUMBER	HARVESTABLE MBER WEIGHT	NUMBER	MEJCHT
GIZZARD SHAD	15281.33	32-16	-	- !	1072_00	51.65	16353.33	133.81
PLUEGILL	P 22 . 30	2.76	43.33	0.46	ı	ı	865.33	3.23
GREEN SJAFTSH	366.67	1.44	101.33	1.26	6-67	0.29	474.67	2.99
GOLDEN SHINER	322.00	C . 92	•	•	1	•	322.00	0.92
MIXED & JAID MILADAS	237.33	1.37	1	ł	•	ı	237.33	1.37
GOL DF I SH	45.33	0.80	57.33	9.13	26.67	8.52	129.33	18.45
THREADFIN SHAD	103.33	0.21	1	1	ı		103-33	0.21
REDEAR SUNFISH	90,00	0.24	6.67	0.07	6.67	0.51	•	0.82
LONGEAR SUNFISH	102.67	0.46	ı	ı	ı	ı	102.67	0.46
COMMON SHINER	97.33	0.12	•	ı		ı	97.33	0.12
BLACK BJLLHEAD	93.33	(.19	•	ı	•	i	93.33	0.19
SPOTTED SUCKER	53.33	0.36	1	,	1	1	53.33	0.36
EMERALD SHINER	26-67	ວ.08	i	ı	ı	1	26.67	0.08
CARP	16.00	0.86	2.00	0.24	6.00	2.99	24_00	4.07
MOSQUITUFISH	22.00	0.01	,	•	ı	ı	22.00	0.31
BLACKSPOTTED TOPHINGOL	13.33	0.01	ı	ı	•	ı	13.33	0.01
BOWFIN	•	,	10.67	1.97	ı	ı	10.67	1.97
BROOK SILVERSIDE	6.67	0.01	ſ	ı	1	ı	6.67	0.01
SMALLADJIH BUFFALU	2.06	0.10	•	ı	2.00	0.91	<b>\$.</b> 00	1.01
CHANNEL CATFISH	,	ı	4-00	0.07		ı	1.00	0.07
MARHOLTH	3.33		ı	ı	ı	•	3.33	-
STONEROLLER	2.00	-	1	ı	1	•	2.00	

T = LESS THAN 0.01 PER HECTARE

TABLE 7. SPECIES COMPUSITION BE COVE POPULATIONS, WHEELER RESERVOIR 1979

SPECIES	PERCENT OF TOTAL NUMBERS	
GIZZARD SHAD	85.84	78.64
BLUEGILL	4.54 2.49 1.69	1.90
GREEN SUNFISH	2.49	1.76
GOLDEN SHINER	1.69	3.54
MIXED & JNID MINNOWS	1.25	08.C
GUL DF1 SH	0.68	10 -84
THREADFIN SHAD	0.54	0.12
REDEAR SUNFISH	0.54	<b>3.48</b>
LUNGEAR SUNFISH	0.54	3.27
COMMON SHINER	0.51	0.07
BLACK BULLHEAD	0.49	0.11
SPOTTED SUCKER	0.28	0.21
EMERALD SHINER	0.14	<b>0.05</b>
CARP	0.13	2.39
MOSQUITOFISH	0.12	1
BLACKSPOTTED TOPMINNOW	0.07	Ŧ
BOWFIN	0.06	1-16
BROOK SILVERSIDE	0.03	7
SMALL MOUTH BUFFALD	0.02	0.59
CHANNEL CATFISH	0.02	0.04
MARMOJTH	0.02	Ť
STONERFILLER	0.01	7
	100.00	100-00

T = LESS THAN 0.01 PERCENT

TABLE 8. SIZE DISTRIBUTION OF MAJOR FISH GROUPS, WHEELER MESERVUR, 1979

	*****	PERCENT	**************************************	******	*******	********PERCENT BY	BY VEIGHT *******	****
FISH GRJJP	P YUUNG OF YEAR	INTER-	HAKVEST-	TOTAL	YJJNG Df Year	INTER- HED JATE	HARVEST-	TOTAL
GAME	7.3	0 8	0.1	8.1	2.9	1.1	0.5	**
ROUGH	1.1	<b>0-4</b>	0-2	1.7	1.3	6.7	7.3	15.4
FORAGE	84.6	0.0	5	90 •2	49.9	0.0	30.4	80.2
TOTAL	92.9	1.2	5.9	100.0	54.1	7.8	38.1	100.0

TABLE 9. SAMPLE AREA LOCATIONS, WHEELER RESERVOIR. 1979

SAMPLE	ARFA	DATE		RIVER HILE	UNIVERSAL GRID CODE
AREA	ш	AUGUST	23	275.2	348773044012
AREA	IV	AUGUST	28	2.7	348773088111
AREA	V	AUGUST	30	285.8	348772119014

C

TABLE 10. STANDING (ROP OF FISH BY SAMPLE AREA. WHEELER RESERVOIR. 1979

SAMPLE AREA	****SIZE*	ACRES	MEAN D METERS		NUMBER OF PER HECTARE	FISH PER ACRE	WEIGHT BI	F FISH LB/AC
AREA III	1.0	2.5	2.2	7.2	23319.0	9437.0	513.0	457.7
AREA IV	0.5	1.5	1.4	4 -6	23448.3	9489.3	596.7	532.4
AREA V	1.4	3.5	1.3	4 .3	16780-0	6790-7	538.6	480.5
ALL AREAS	3.0	7.4	1.6	5.4	21182.4	8572.3	549.4	490.2

## TABLE 11. COMMON AND SCIENTIFIC NAMES OF FISH IN ROTENONE SAMPLES, WHEELER RESERVOIR, 1979

COMMON NAME

SCIENTIFIC NAME

### GAME

WHITE BASS
YELLOW BASS
MARMOUTH
GREEN SUNFISH
PLUEGILL
LONGFAR SUNFISH
HEDEAR SUNFISH
SMALLMOUTH BASS
SPOTTED BASS
LARGEMOUTH BASS
WHITE CRAPPIE
HLACK CRAPPIE
YFLLOW PERCH
SAUGER

MDRONE CHRYSDPS
MORGNE MISSISSIPPIENSIS
LEPOMIS GULGSUS
LEPOMIS CYANELLUS
LEPOMIS MACROCHIRUS
LEPOMIS MEGALOTIS
LEPOMIS MICRULOPHUS
MICHOPTERUS DOLOMIEUI
MICROPTERUS PUNCTULATUS
MICHOPTERUS SALMUIDES
POMOXIS ANNULARIS
POMOXIS NIGROMACULATUS
PERCA FLAVESCENS
STIZUSTEDION CANADENSE

### RNUGH

SPUTTED GAR
LINGNOSE GAR
SKIPJACK HERRING
CARP
SMALLMHUUTH BUFFALU
BIGMHUTH BUFFALU
SPUTTED SUCKER
SILVER REDHURSE
GULDEN REDHURSE
CHANNEL CATFISH
FLATHEAD CATFISH
FRESHWATER DRUM

LEPISOSTEJS OCULATUS
LEPISOSTEJS OSSEUS
ALOSA CHRYSUCHLORIS
CYPRINUS CARPIO
ICTIOBUS BUBALJS
ICTIOBUS CYPRINELLUS
MINYTREMA MELANOPS
MOXIISTOMA ANISURUM
MOXIISTOMA ERYTHRURUM
ICTALURUS PUNCTATUS
PYLUDICTIS ULIVARIS
APLODINOTUS GRUNNIEMS

### FORAGE

GIZZARD SHAD
THREADFIN SHAD
STUNERULLER
SILVER CHUB
GULDEN SHINER
FMERALD SHINER
BULLHEAD MINNOW
TADPULE MADTOM
BLACKSPOTTED TOPMINNOW
MUSQUITUFISH
URANGESPOTTED SUNFISH
FANTAIL DARTER

DORUSOMA CEPEDIANUM
DORUSOMA PETENENSE
CAMPOSTOMA ANOMALUM
HYBOPSIS STORERIANA
NOTEMIGONUS CRYSOLEUCAS
NOTHOPIS ATHERINDIDES
PIMEPHALES VIGILAX
NOTURUS GYRINUS
FUNDULUS OLIVACEUS
GAMBUSIA AFFINIS
LEPOMIS HUMILIS
ETHEOSTOMA FLABELLARE
ETHEOSTOMA KENNICOTTI

TABLE 11. COMMON AND SCIENTIFIC NAMES OF FISH IN ROTENONE SAMPLES, WHEELER (Cont.) RESERVOIR, 1979

COMMIN NAME

LOGPERCH

RIVER DARTER

BROOK SILVERSIDE

SCIENTIFIC NAME

PERCINA CAPRODES

PERCINA SHUMARDI

LABIDESTHES SICCULUS

TABLE 12. SIZE CLASSES (MILLIMFTERS) USED IN FISH INVENTORIES

SPECIES	YOUNG	INTER-	HARVEST-
GAME WHITE BASS YELLOW BASS STRIPED BASS RUCK BASS BLUEGILL OTHER SUNFISH SMALLMOUTH BASS SPOTTED BASS LARGEMOUTH BASS CKAPPIE SAUGER			
WHITE BASS	1-150	151-200	201 AND DAEL
YELLON BASS	1-150	151-200	201 AND DVE
STRIPED BASS	1-175	176-375	376 AND DAF
RUCK BASS	1-75	76-125	126 AND DVE
BLUEGILL	1-75	76-125	126 AND UVE
HINER SURFISH	1-75	78-125	126 AND BAF
SMALLMOUTH BASS	1-100	101-200	501 AND DAF
SPULLED BASS	1-100	101-200	201 AND OVER
LARGERUUTH BASS	1-100	101-225	226 AND UVER
LKAPPIT	1-75	18-175	1/6 AND UVE
SAUGER	1-200	201-275	276 AND OVE
WALLEYE	1 - 75 1 - 200 1 - 200	201-275	519 MMD MAEI
ROUGH LAMPREY PADDLEFISH GAR BOWFIN SKIPJACK HERRING MODNEYE CARP GOLDFISH BUFFALT CARPSUCKERS REDHORSES OTHER SUCKERS BLUE CATFISH CHANNEL CATFISH BULLHEADS FLATHEAD CATFISH FRESHWATER DRUM			
LAMPREY	1-50	51-125	126 AND DVE
PADDLEFISH	1-300	301-450	451 AND DVE
G AR	1-300	301-475	476 AND DVE
BOWFIN	1-200	201-300	301 AND OVER
SKIPJACK HERRING	1-150	151-275	276 AND DVER
MOONEYE	1-150	151-300	301 AND DVE
CARP	1-200	201-300	301 AND DVE
GOLDFISH	1-150	151-250	251 AND OVER
BUFFALIT	1-200	201-300	301 AND OVER
CARPSUCKERS	1-175	176-250	251 AND DVE
REDHOR SE S	1-175	176-250	251 AND DVE
OTHER SUCKERS	1-175	176-250	251 AND DVE
BLUE CATFISH	1-125	159-555	559 AND DAEL
CHANNEL CATEISH	1-125	126-225	559 AND DAFE
BULL HE ADS	1-100	101-175	176 AND UVER
FLAINTAU LAIFISH	1-152	126-275	2/6 AND OVER
FLATHEAD CATFISH FRESHWATER DRUM GRASS PICKEREL	1-165	120-200	ZUI AND DEC
FORAGE GIZZARD SHAD THREADFIN SHAD DRANGESPOTTED SUNFISH MISC. FORAGE FISH			
GIZZARD SHAD	1-125	-	156 AND DAEL
THREADFIN SHAD	1-125	-	126 AND DVER
DRANGESPOTTED SUNFISH	1-50	51-75	76 AND DVER
MISC. FORAGE FISH	ALL SIZES	-	-

TABLE 13. AREA POPULATIONS FOR MAJOR FISH GROUPS , WHEELER RESERVOIR, 1979

SAMPLE AREA	F1SH GROUP	NUMBER OF SPECIES	-	F FISH ACRE	WEIGHT (	F FISH LBS/AC
ARFA III						
	GAME	13	9045.0	3660.4	117.7	105.0
	RBUGH	10	400 -0	161.9	155.9	139.1
	FORAGE	12	13874_0	5614.7	239.4	213.0
		35	23319.0	9437.0	513.0	457.7
AREA IV						
	SAME	10	13498_3	5462.6	236.8	211.3
	ROUGH	8	445.0	180-1	169.0	150-8
	FORAGE	10	9505-0	3846.6	190.9	170.4
	, , , , , ,	28	23448-3	9489.3	596.7	532.4
AREA V				,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
MACH 7	SAME	12	2857.9	1156.5	57.7	51.5
	ROUGH	11	435.0	176.0	184.6	
	FORAGE	14	13487-1		296.3	
	• • • • • • • • • • • • • • • • • • • •	37	15780.0	6790.7	538.6	480.5
ALL AREAS		<b></b> -		• • • • • • • • • • • • • • • • • • • •	2000	
	GAME	14	8467.1	3426.5	137.4	122.0
	ROUGH	12	426.7	172.7	169.8	151.5
	FORAGE	16	12288.7	4973-1	242.2	
		42	21182-4	8572.3	549.4	490 -2

TABLE 14. SIZE DISTRIBUTION P. HECTARE, AMEELER RESERVOIR, ..79

\*

SPECIFS	□ VUC™C □	EAR	<b>7</b>	Ľ	HAR	TABLE	-	A L
		WE 16HT	NUMBER			*	NUMBER	
GIZZARD SHAD	315.11	7.			7357.03	217.09	7672-14	16
_	2392.83	8	1807.51	31.40	484.6	30.6	684.9	69
THREADFIN SHAD	4329.97	9	· 1		; ; ;	• 1	329.9	ه ن
LUNGEAR SUNFISH	1193.94	0.4	6.7	٤	0.9	2.6	6.7	20
•	214.41	0	80.0	1.3	2.3	7	376.7	m
-,	174.84	0.55	89.84	1.53	16.22	88.0	6.0	
	183.59	9	3.1	~	7.0	· ·	7.7	3
FRESHJATER DRUM	60.95	4	6.0	. 6	6.2		3	
	74.65	S	2.1	6	1.3	6.0	8.1	
	132.27	•	. (		<u>.</u> 1		2.2	_
SPOTTED SUCKER	ı	i	7		65-58	34.36	7.6	•
YELL DA BASS	66.33	~	0.33	0.02	• 1		9	ی
BULLINE AD HINNON	64.22	7		•	)		7	
SPOTTED BASS	40.22	0.24	3.2	, ~	4	•	5.9	
SMALL#OUTH BASS	24.57	7	~	3	5	-	4.7	
	,		1.76	19.0	42.62	57.30	£ . 3	7
GOLDEY REDHORSE	•	ı	~	7	-	6	4.6	
BLACKSPOTTED TOPHINNON	25.84	90.0	ŧ	1	ì	ı	5.8	0
DRANGE SPOTTED SUNFISH	0.24	_		3	•	0.0	4.3	
	i	- 1	8.70	44.0	15.51	2.26	4.2	•
•,	14.62	~	7	7		ŧ	9-9	
	3.33	•	€.	5	5 -49	3.34	5.6	٠
SHINER	13.05	0.42	ı	ı	1	t	3.0	0.42
	11.05	•	ı	1	ī	ı	0.1	
_	5.25	7	0.67	0.18		9	9.	•
•	1.00	0	ì	ı	7.56		Ş	
SILVER REDHORSE	ł	1	ł	ı		4	€,	•
BROJK SILVERSIDE	7.32	9	1	1	1	1	~	•
SAUGER	3.43	0		0.20	1.00	0.20	Ę,	•
SKIPJACK HERRING	0.71	0.01	~	•2	0.24	0	~	٠
SILVER CHUB	2.81	0	ı	ι	1	1	•	•
BICHOJTH BUFFALO	ŧ	1	1	ı	2-71	90.5		•
STRIPETAIL DARTER	2.56	-	1	ı	1	1	Š	<b>-</b>
MOSQUI TOF ISH	1.67	-	ı	ı	,	1	9.	_
	•	•	1		1.19	4.10	7	4.10
LONGNOSE GAR	•	ı	0-67	0.10	0.33	6	9	Ç,
FANTALL DARTER	0.71	<b>-</b>	•	•		-		_ '
	1	•	(	11	19-0	0.11	9	0-13
VELLOW PERCH	1	11	0.56	-	ı	1	٠,١	<b>-</b> ,
TADFULE MADIUM	0.33	-	•	•	•	1		<del></del> (
œ	72°0	-	•	1	1	1	7.	<b>-</b>
	77.0	-						

TABLE 15. SPECIES COMPUSITION OF COVE PUPULATIONS, WHELLER RESERVOIR 1979

SPECIES	PERCENT DF TOTAL NUMBERS	PERCENT OF TOTAL WEIGHT
SIZZARD SHAD SILUEGILL CHREADFIN SHAD UNGEAR SUNFISH SECEN SUNFISH SEEN SUNFISH SEE	36.22 22.12 20.44 11.60 1.78 1.33 1.29 0.96 0.84 0.62 0.41 0.31 0.30 0.26 0.21 0.19 0.12 0.11 0.19 0.12 0.11 0.08 0.07 0.06 0.05 0.04 0.04 0.04 0.04 0.03 0.03 0.03 0.03	40.00
LUEGILL	22.12	12.72
HREADFIN SHAD	20.44	3.75
UNGEAR SUNFISH	11-60	5-15
EDEAR SUNFISH	1.78	2.48
REEN SUNFISH	1.33	0.54
ARMOUTH	1.29	0.58
RESHMATER DRUM	0.96	4.96
ARGENOUTH BASS	0.84	2.41
DEPERCH	0-62	0.18
POTTED SUCKER	0.41	6.33
FLLOW BASS	0.31	0.05
ULLHEAD MINNOW	0 - 30	3.02
POTTED BASS	0.26	0.17
MALLMOUTH BASS	0-21	0.25
MALLMOUTH BUFFALO	0.21	10.55
OLDEN REDHURSE	0.19	3.72
LACKSPOTTED TOPMINNON	0.12	0.01
	0.11	0.02
HITF CRAPPIE	0.11	0.49
MITE RASS	0 - 08	0.07
LATHEAD CATEISH	0.00	3.71
THE DEM SHEMER	0.06	0.08
MERALD SHIMER	0.05	1
POTTED CAR	0.04	0.91
MANNEL CATETCH	0.04	3.82
TIMES BEDWINGSE	0.04	0.99
INDUR CITALDIONS	0.03	1
ANGED	0.03	0.09
KIP JACK HEBRING	0.03	0.06
IRANGESPOTTED SUMFISH INTTE CRAPPIE INTTE BASS LATHEAD CATFISH OLDEN SHINER IMERALD SHINER INDOTTED GAR HANNEL CATFISH SILVER REDHORSE INDOK SILVERSIDE INDOK SILVERSIDE INDOK HERRING ILVER CHUB ITRIPETAIL DARTER IDSOUTTOFISH INDOK NOSE CAR	0.01	1
IEMPHA RUFFALL	0.01	0.92
TRIPETALL DARTER	0.01	1
INCOULTUS ICH	1	j
ARP	Ť	0.75
DWC WO SE CAD	i	0.20
AMTAII DARTER	ř	7 T
IGMOUTH BUFFAL() IRIPETAIL DARTER IDSQUITOFISH ARP ONGNOSE GAR ANTAIL DARTER LACK CRAPPIE FELLOW PERCH ADPOLE MADTOM ITOMEROLLER	i	0.02
FILIN PERCH	į	1
ANDRIS MANTOM	i	Ţ
TONEROLLER	Ť	, T
IVER DARTER	, T	<u> </u>
ILLE PROILE	100.00	100.00

T = LESS THAN 0.01 PERCENT

TABLE 16. SIZE DISTRIBUTION CF MAJOR FISH GROUPS, WHEELER RESERVOR, 1979

AGJP YOUNG INTER- HARVEST- OF YEAR WEDJATE ABLE 20.7 16.0 3.3			PERCENT	BY NUMBER.	********	******	PEPERCENT	**************************************	••••••
20.7 16.0 3.3	ISH GROJP	<b>&gt;</b>	INTER-	HARVEST - ABLE	TOTAL	YOUNG OF YEAR	INTER- MEDIATE	HARVEST- ABLE	TOTAL
23.2 0.4 1.2 23.2 0.1 34.7 44.2 16.5 39.3	CANE ROUGH FORAGE TUTAL		16.0	3.3 1.2 34.7 39.3	40°0 2 °0 100°0	2.5	1.11	29.7 39.5 80.4	25.0 30.9 44.1

### APPENDIX C

Task 2
Physical Data on Young-of-the-Year Fish Selected for DDTR Analysis

1

# Physical Data on Young-of-the-Year Fish Selected for DDTR Analysis

Sample #	Location	Species	Length (mm)	Weight (gm)
DDT 2M-1	Elk River	Bluegill	91	15.7
		J	84	11.8
			85	12.2
			78	9.0
DDT 2M-2	Elk River	Bluegill	56	3.5
			63	4.5
			58	3.8
			55	3.1
			55	3.4
			54	3.2
			50	2.2
			54	3.2
			51	2.7
			55	3.3
			52	2.7
			50	2.7
			48	2.4
			46	2.1
			50	2.8
			52	2.8
			49	2.5
			50	2.7
			48	2.1
			49 52	2.0 2.8
			32 49	2.8
			49 45	1.8
DDT 2M-3	Elk River	Gizzard Shad	120	18.1
UD1 2H-3	EIK KIVEI	GIZZAI'Q Shaq	116	
			120	15.2
			120	15.0 15.9
			120	16.3
			117	16.3
DDT 2M-4	Elk River	Gizzard Shad	90	6.0
DD1 211 5	EIK KIVEL	GIZZAIG SHAG	85	5.6
DDT 2M-5	Elk River	Largemouth	83	5.0
		Bass	108	17.0
		2020	109	15.0
			102	11.7
DDT 2M-6	Elk River	Largemouth		- • • •
_	<del></del>	Bass	94	9.7
· ·			87	7.6
			84	8.2
			85	7.1
			83	7.1
			85	6.9

Sample #	Location	Species	Length (mm)	Weight (gm)
DDT 2M-7	Elk River	Largemouth		
<b>JD1</b> 2.1 7	DIN MIVE	Bass	75	5.1
			74	5.0
			76	5.1
			71	4.3
			68	3.7
DDT 2M-8	Lawrence Co. Park-Wheeler Lake	Bluegill	55	2.7
			45	1.6
			47	0.9
			46	1.6
			44	2.0
			41 40	2.2 1.9
			48	1.7
			45	1.4
			34	1.3
			44	1.2
			40	1.1
DDT 2M-9	Lawrence Co. Park-Wheeler Lake	Bluegill	35	0.9
			36	0.8
			35	0.6
			37	0.5
			33	0.6
			27	0.3
			35	0.8
			33	0.6
			35 30	0.5 0.7
			34	0.7
			3 <del>4</del> 37	0.8
			37	1.0
DDT 2M-10	Lawrence Co. Park-Wheeler Lake	Gizzard Shad	80	3.8
			85	5.4
			86	5.5
			87	4.4
			84	5.2
			80	3.8
			82	4.2
505 OV 44			80	3.9
DDT 2M-11	Lawrence Co. Park-Wheeler Lake	Gizzard Shad	75 75	3.4
			75 76	3.0 3.5
			76 75	3.5
			73 77	3.2
			70	2.9
			71	2.9
			65	2.3
			65	2.2
			65	2.4

Sample #	Location	Species	Length (mm)	Weight (gm)
DDT 2M-12	Huntsville Spring Branch	Gizzard Shad	82	4.8
			84	5.3
			84	5.1
			88 84	6.1 5.5
			79	4.2
			85	5.4
			80	4.1
			83	5.2
			92	7.2
DDT 2M-13	Huntsville Spring Branch	Gizzard Shad	72	3.6
			75	3.7
			76	3.2
			67	2.4
			71	3.1
			64 74	2.9 3.6
			7 <b>4</b> 70	2.1
DDT 2M-14	Huntsville Spring Branch	Gizzard Shad	63	2.1
DD1 211 14	nunesville opiing branch	OIZZAIG DIIOG	62	2.2
			63	2.0
			60	1.8
			60	1.7
			50	1.0
DDT 2M-15	Huntsville Spring Branch	Bluegill	71	3.7
			71	7.7
			65	5.5
			64 50	5.1 3.7
DDT 2M-16	Huntsville Spring Branch	Bluegill	59 51	2.9
DD1 211-10	nunesville Spring Branch	DineRiti	57	2.5
			45	1.9
			54	2.6
			48	2.1
			47	1.7
			45	1.2
_			46	1.8
DDT 2M-17	Huntsville Spring Branch	Bluegill	42	1.1
			35	0.5
			40 40	1.1
			40 40	1.2 0.9
			41	1.1
			38	1.0
			40	0.9
			44	1.1
			40	0.8
			37	0.7
			35	0.4
			40	0.9
			36	0.7

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Sample #	Location	Species	Length (mm)	Weight (gm)
DDT 2M-18	Indian Creek	Bluegill	65	5.0
DD1 211-10	Indian cieck	Diucgili	64	5.3
			67	6.1
			64	5.4
			65	6.0
			65	6.0
			60	4.8
			60	4.2
			62	4.8
			67	5.6
			65	4.8
DDT 2M-19	Indian Creek	Bluegill	56	3.4
			55	2.8
			54	3.4
			55	2.9
			50	2.6
			49	2.3
			50	2.5
			49	2.1
			50	2.5
			50	2.4
			45	1.8
			54	2.9
			54	2.7
			49	2.1
DDE 014 00	* 1.	0:	45	1.6
DDT 2M-20	Indian Creek	Gizzard Shad	87	5.1
			85	5.4
			89 90	6.4
				6.9
			84 81	5.5 4.5
			80	4.7
DDT OM 01	Indian Creek	Gizzard Shad	72	3.8
DDT 2M-21	Indian Creek	GIZZAIQ Shaq	72	3.5
			74	4.1
			77	4.3
			75	4.0
			75 75	4.0
			73	3.6
			75	3.9
			72	3.1
			75	3.7
			75	4.7
			70	3.2
			72	3.6
			60	3. <b>9</b>

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The state of the s

Sample #	Location	Species	Length (am)	Weight (gm)
DDT 2M-22	Indian Creek	Largemouth		
		Bass	107	13.6
			100	11.4
			115	16.9
			110	16.7
			101	11.5
			107	14.8
DDT 2M-23	Indian Creek	Largemouth		
		Bass	100	10.8
		5225	90	13.3
			93	13.9
			93	13.3
DDT 2M-24	Indian Creek	Tavaamauth	33	13.3
DD1 211-24	Illigiali Cicek	Largemouth	~1	
		Bass	74	3.9
			85	5.9
			76	4.0
			80	5.0
			79	5.5
			72	4.0

APPENDIX D

Task 2
DDTR Analysis Data for Young-of-the-Year Fish Samples

\*

# ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WINDERS RESERVOIR, ALABAMA

TASK 2 FISH POPULATION ESTIMATES FOR INDIAN CREEK AND MUNTSVILLE SPRING BRANCM BYBANNENTS OF WHEELER RESERVOIR Dot amalysis of young of young of year fishes

LOCATION	L AB TD	SPEC 1ES	LENGTH RANGE (MM)	# L IPI 0S	NUMBER OF F 1 SH	CONCENT COT-0, P (UG/G)	DOT-P, P (UG/G)	0F 00T 000-0.P	MEA SURED DOD-P, P (UG/G)	IN F15H <sup>1</sup> 00E-0.P (UG/G)	1- (UG/G) 00E-P,P (UG/G)	HINIMUN (UG/G)	DOTR HAXINUM 1UG/G)
Ė	100-1	BLUEGILL	076-091	2.76	•	0.080	<0.020	0°00		0.020	0.190	0.360	0.430
ĸ	700	BLUEGILL	045-063	2.01	*	0.0	<0.050	<0.020		30.0	0.069	0.205	0.245
	2M-003	GIZ. SHAD	116-120	200	٥	0000	00000	0.029		<0.000	0.150	0.309	0.40
•	2M-004	GIZ. SHAD	082-080	0.17	~	<0.090	090.0>	<0°0>		<0.050	<0.00	000.0	0.370
	2H-005	L.M. BASS	102-109	0.40	•	<0.050	040.0>	<0.030		<0.030	0.037	0.037	0.217
•	900 E	L.M. BASS	160-690	0.13	•	<0.050	<0.050	<0.030		060.00	0.030	0.00	0.220
	2H-007	L.M. BASS	068-07 b	0.30	•	050.05	0.00	<0.030		<0.00	30.0	0.0	0.221
	2M-015	BLUEGILL	059-071	2.18	'n	0.610	0.410	9.850		3.310	10.1	62.540	62.540
	2H-016	BLUEGILL	045-057	18.0	•	0.600	0.310	9.860		4.010	11.9	61.360	61.380
	_	BLUEGILL	035-044	1.87	13	1.320	0.870	17.8		7.360	22.2	118.350	110.350
	2H-012	G12. SMAD	075-092	6.69	2	0.890	0.480	11.2		2.400	8.370	47.240	47.240
		G12. SMAD	064-076	2.65	•	2.190	1.760	34.9		9.340	92	150.690	069.051
	2 <del>1</del> 0 1 4	G17. SHAD	050-063	0.39	٠	0.150	0.00	3.110		0.920	3.050	13.000	13.00 10
		BLUEGILL	060-067	1.17	11	0.210	<0.00	2.200		1.270	3.630	17.910	17.950
		BLUEGILL	045-056	1.31	15	0.190	0.079	2.510		1.590	009	21.269	21.269
		G12. SHAD	060-080	1.01	_	0.560	0.430	12.4		3.620	11.1	57.930	57.930
•		G12. SMAD	060-072	0.55	<b>*</b>	0.260	0.120	4.100		1.190	3.560	16.470	24.01
-		BLUEGILL	034-055	1.03	12	<0.00	<0.00	0.0×		<0.030	0.093	0.163	0.333
	\$00-k	BLUEGILL	027-037	0.43	13	<0.100	<0.100	<0.00		<0.00	0.092	0.164	0.514
	200	GIZ. SMAD	060-067	9 0° E	•	<b>00.0</b>	<b>00.00</b>	<0.030		<0.030	0.110	0.20	0.340
	-	GIZ. SHAD	067-077	0.22	10	<0.030	<0.030	<0.020		<0.00	0.010	0.018	0.138
	4-025	L.M. BASS	100-115	0.20	•	<0.050	<0.00	<0.030		<0.030	0.062	0.00	0.240
	24-023	LaMe BASS	001-060	0.20	*	00.00	<0.050	<0.030	<0.030	<0.030	0.085	C.085	0.2H
	*20-#	L.M. BASS	070-085	0.31	•	<0.00	<0°00	<0°00		<0.030	0.120	0.164	0.314
							•						

FOOTWOTES:

ELK RIVER AND LAMRENCE CO. PARK SAMPLES COLLECTED 8/79

HUNTSVILLE SPRING SRANCH AND INDIAN CREEK SAMPLES COLLECTED 9/79

HUNDER OF FISH COLUMN INDICATES NUMBER OF FISH COMPOSITED.

HINDHUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

HAXIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

-- ALL SAMPLES ANALYZED BY STEMART LABORATORIES, INC.

-- INDICATES SAMPLE IS A MERGED VALUE IVALUE REPORTED IS THE AVERAGE OF TWO ANALYSES).

INTERLAB COMPARISONS INDICATED THESE DATA WERE SIGNIFICANTLY ALL SANDLES IN THIS TABULATION WERE ORIGINALLY PREPARED BY SLI FOR ANALYSIS ON 12-12-79.

LOWER THAN EAR DATA. HEFER TO QUALITY ASSURANCE DOCUMENT FOR DETAILS. ENGINEERING AND ENVIRONMENTAL STUDY
OF DDT CONTAMINATION OF HUNTSVILLE
SPRING BRANCH, INDIAN CREEK, AND
ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

### TASK 3

ASSESSMENT OF DDT CONCENTRATIONS
IN SEDIMENTS CORRESPONDING TO
AREA-WIDE FISHERIES STUDIES

Tennessee Valley Authority Office of Natural Resources

August 1980

### **PREFACE**

This document was prepared in support of the Engineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

### CONTENTS

Worktask	Description .	•	٠	•	•	•	•	•	•	٠	•	•	•	•	•	•	٠	•	٠	•	Page 1
Sampling	Location Maps																				Appendix A
Raw Data	Tabulations .																				Appendix B

TASK 3
WORKTASK DESCRIPTION

# ASSESSMENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES

### 1.0 Purpose

To define the areal extent of DDT contamination of sediments throughout Wheeler Reservoir.

### 2.0 Scope

Bottom sediment samples were collected throughout Wheeler Reservoir, on the main stream Tennessee River and from selected tributaries, and from selected locations on the adjacent Wilson and Guntersville Reservoirs. Water samples also were collected. Sediment samples were analyzed for particle size distribution; sediment and water samples were analyzed for DDT residues which consisted of two isomers of each metabolite (DDT, DDE, DDD).

### 3.0 Procedure

### 3.1 Sample Locations

3.1.1 Sediment sample collections were attempted from the following locations: cross sections at 5-mile intervals between TRM 260 and 350, cross sections at TRM 375 and 400, and cross sections at the 15 tributary stations listed in Table 1 and shown on the maps in Appendix A. Samples were collected at five equidistant points along each cross section. However, field crews were unable to collect sediment samples from a one hundred mile reach of the Tennessee River, beginning at TRM 305, about 16 miles downstream of Triana, to TRM 400 in Guntersville Reservoir, at the prescribed 5-mile intervals (except at TRM 325 and 350). Subsequent sampling

Table 1
SEDIMENT SAMPLING LOCATIONS

# Assessment of DDT Concentrations in Sediments Corresponding to Area-Wide Fisheries Studies

Stream	Mile	Reservoir	Sediment	Water
Tennessee River	260	Wilson	x	
Tennessee River	265	Wilson	X	
Tennessee River	270	Wilson	X	X
Tennessee River	275	Wheeler	X	
Tennessee River	280	Wheeler	X	
Tennessee River	285	Wheeler	X	
Tennessee River	290	Wheeler	X	X
Tennessee River	295	Wheeler	X	
Tennessee River	300	Wheeler	X	
Tennessee River	3 <b>05</b>	Wheeler	X	
Tennessee River	310	Wheeler	X	
Tennessee River	315	Wheeler	X	X
Tennessee River	320	Wheeler	X	
Tennessee River	325	Wheeler	X	
Tennessee River	330	Wheeler	X	
Tennessee River	335	Wheeler	X	
Tennessee River	340	Wheeler	X	
Tennessee River	345	Wheeler	X	X
Tennessee River	350	Guntersville	X	X
Tennessee River	375	Guntersville	X	
Tennessee River	400	Guntersville	X	
Elk River	5	Wheeler	X	X
Elk River	10	Wheeler	X	Х
Elk River	15	Wheeler	X	Х
Spring Creek*	1.0	Wheeler	X	Х
Spring Creek	2.0	Wheeler	X	X
Limestone Creek*	1.5	Wheeler	X	X
Limestone Creek	3.0	Wheeler	X	X
Flint Creek*	6.7	Wheeler	X	X
Flint Creek	13.3	Wheeler	X	X
Cotaco Creek*	3.8	Wheeler	X	X
Cotaco Creek	7.7	Wheeler	X	X
Flint River*	1.2	Wheeler	X	X
Flint River	2.5	Wheeler	X	X
Paint Rock River*	1.9	Wheeler	X	X
Paint Rock River	3.9	Wheeler	X	х

<sup>\*</sup>At Spring Creek, Limestone Creek, Flint Creek, Cotaco Creek, Flint River, and Paint Rock River the two sampling locations (each tributary) approximate the 1/3 and 2/3 river mile distance between the inflow of the tributary at winter pool (upstream location of backwater effect) and the mouth of the tributary with the Tennessee River.

above and below the prescribed transects indicated a hard bottom with no collectable sediment. A third attempt was made to sample these areas based on siltation data. These locations are shown in table 2. This attempt was also unsuccessful except for TRM 320.8 where sediment was found at two horizontal locations.

3.1.2 Water samples were collected from the stations shown in Tables 1 and 2 and on the maps in Appendix A.

### 3.2 Field Collection

- 3.2.1 Sediment samples were collected by dredge, passed through a 1/4-inch mesh screen, mixed for uniformity, and placed in specially prepared glass pint jars. If possible, one pint of sediment was collected at each location. Each sample was handled separately and identified properly.
- 3.2.2 Water samples were collected by a hand-held sampling device and placed in specially prepared glass bottles. A total volume of one gallon was required at each sampling station. The additional composite water samples collected from the eight stations in table 2 included: (1) a near-bottom composite, which was obtained by first measuring the water depth with a separate line and then triggering the sampler at three feet above the measured depth; and (2) a full water column composite, which was obtained by sampling the water column above the "near bottom composite" at four equidistant points, and compositing all samples collected across a transect.

### 3.3 Sample Handling

3.3.1 Sediment samples were collected in 1-pint glass containers (Mason jars) specially cleaned for pesticide analysis. Container lids were lined with aluminum foil.

# Table 2. Additional Locations for the Collection of Water and Sediment Samples for DDTR Analysis

### Sediment and Water Samples

TRM 305.7 (Silt Range 40)
TRM 309.7 (Silt Range 44)
TRM 314.0 (Silt Range 50)
TRM 320.8 (Silt Range 57)
TRM 326.0
TRM 331.0
TRM 333.6 (Silt Range 63)
TRM 343.9 (Silt Range 68)
TRM 395.0

### Water Samples only

TRM 375.0 Elk Rv. 8.5 Spring Cr. 1.5 Limestone Cr. 1.5 Flint Cr. 2.0 Cotaco Cr. 1.2 Flint Rv. 1.6 Paint Rock Rv. 1.3

- 3.3.2 Water samples were collected in glass bottles specially cleaned for pesticide analysis. A total volume of one gallon was required for each sampling location.
- 3.3.3 All sediment and water samples were placed on ice immediately upon collection, and kept at  $4^{\circ}C$  through transportation to the laboratory.

### 3.4 Sample Analysis

- 3.4.1 The five sediment samples collected at each cross section were composited in the laboratory into one sample for analysis. Each composite sediment sample was analyzed for particle size distribution ranging from > 2.0 mm to < 0.25 µm. This analysis included % moisture and % volatile solids. All six forms of DDT residues were measured on all composite samples.
- 3.4.2 Water samples were analyzed for all six forms of DDT. In addition, each water sample listed in table 2 was analyzed for total and filterable DDTR.
- 3.4.3 All analyses were performed by approved or acceptable procedures.

  Approximately 10 percent of all analyses were replicated. Additionally, approximately 10 percent of all samples analyzed were split and analyzed by a second laboratory. Spiked samples were also utilized to document accuracy of laboratory results (see Quality Assurance document for details).

### 3.5 Data Handling and Reporting

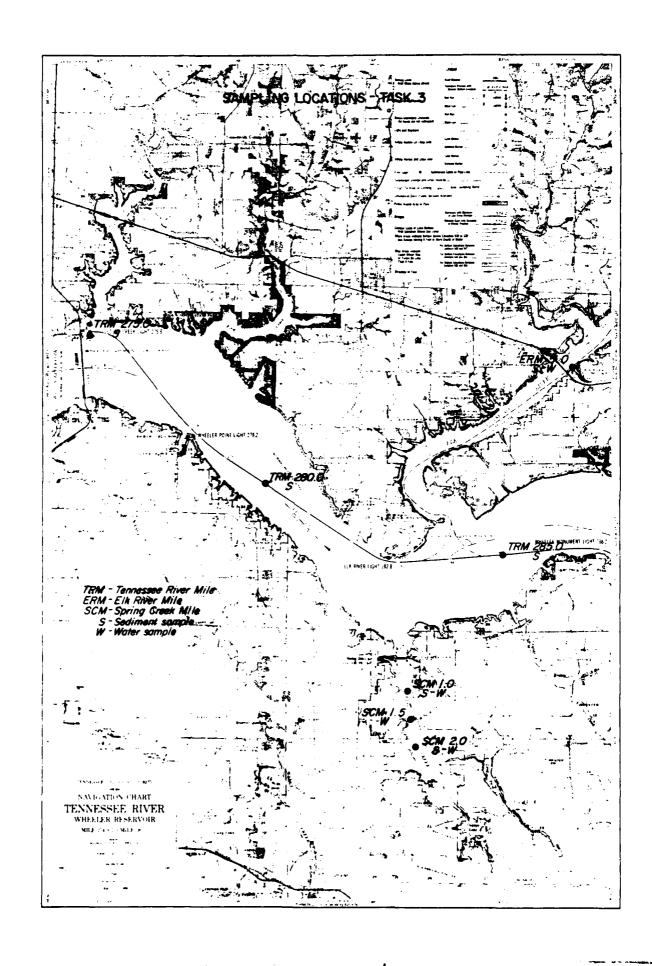
3.5.1 All data are summarized into a tabular form and appear in Appendix B. This table includes: Sample identification number, location, date collected, and all analytical data (each of six forms of DDT and total minimum and maximum residue concentration).

APPENDIX A

TASK 3

SAMPLING LOCATION MAPS

\*

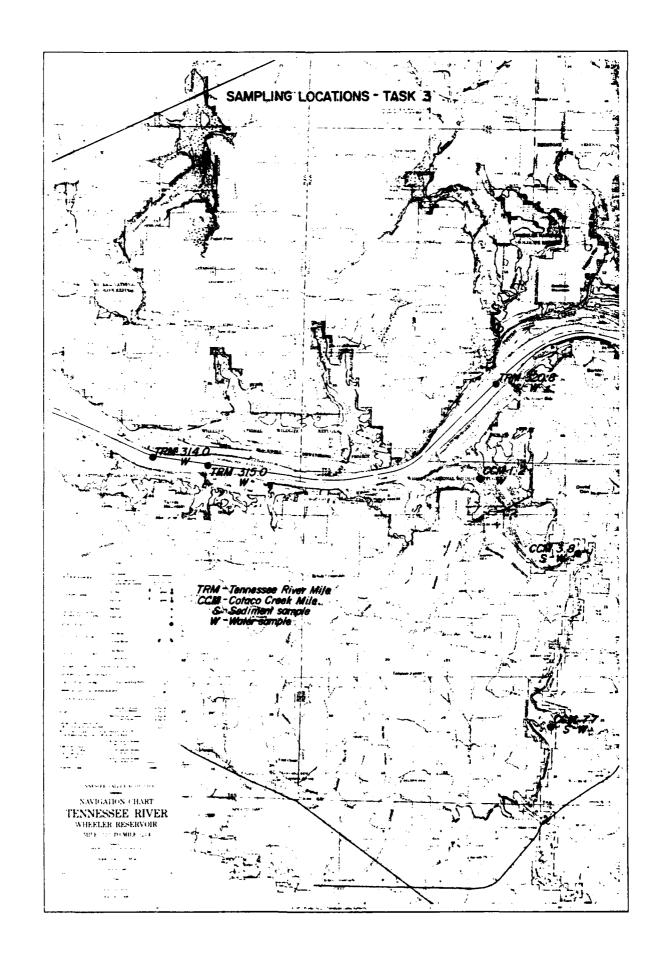


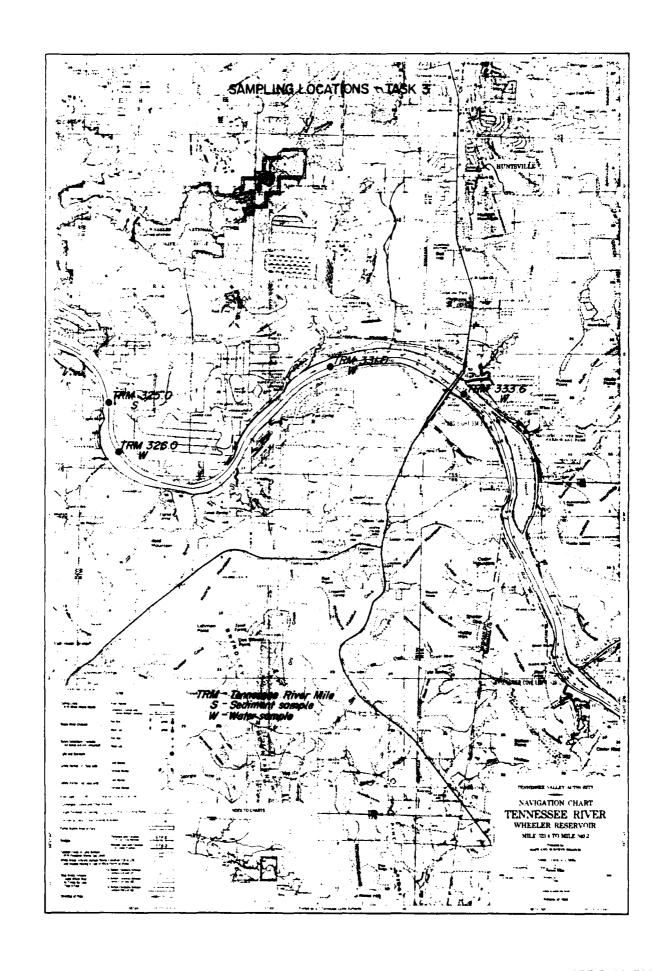
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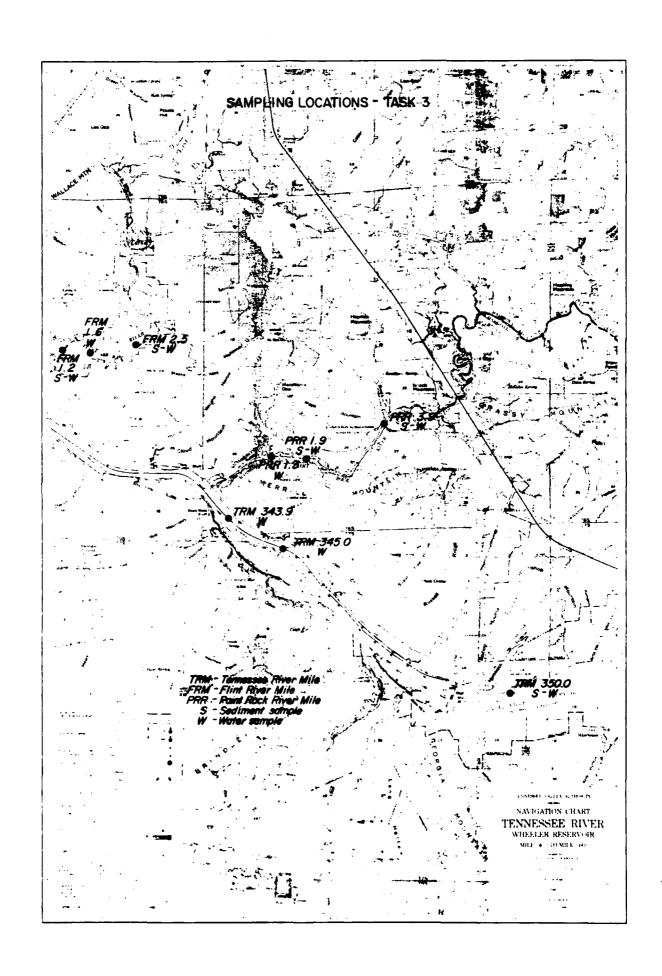
SAMPLING LOCATIONS - TASK 3 TRM - Tennessea River Mile 5 - Sediment sample W - Water sample TENNESPEE VALLEY ALTHORITY NAVIGATION CHART TENNESSEE RIVER WHEELER RESERVOIR MILK 257.5 TO MILK 259.9 

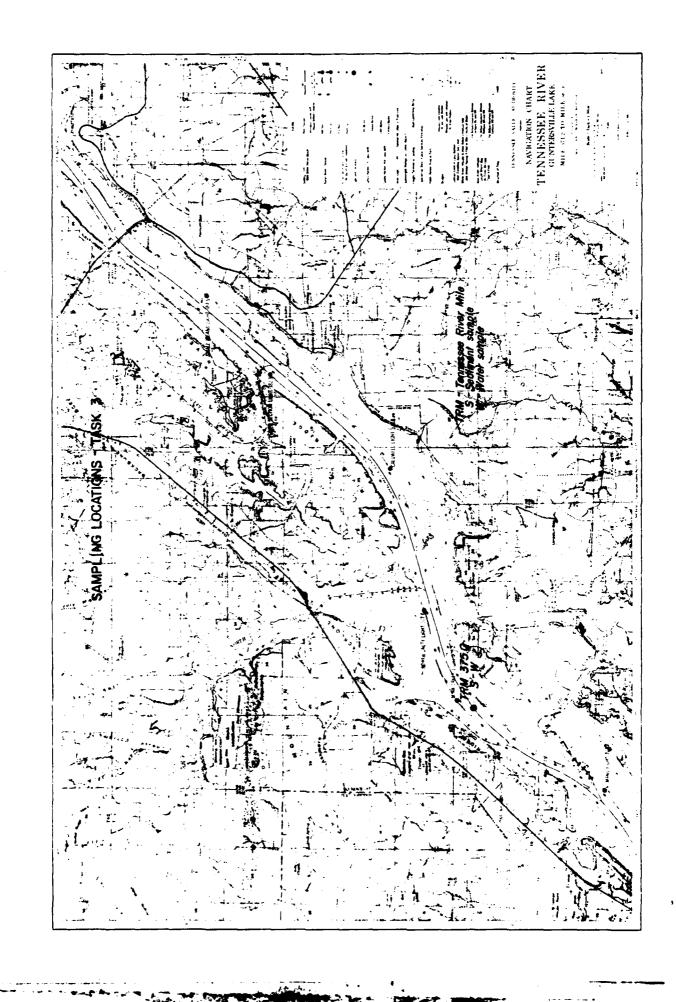
\*

SAMPLING LOCATIONS - TASK 3 TRM 300.0 TRM - Teanessee River Mile FCM - Flint Creek Mile LCM - Limestone Creek Mile S - Sediment sample W - Water sample TERRORE NULLS ALS NAVIGATION CHART TENNESSEE RIVER WHEELER RESERVOIR









APPENDIX B
RAW DATA TABULATIONS

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHELER RESERVOIR, ALABAMA

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STREAM	MILE	LOCATION	DATE	LABID	(NG/L)	(790)	らん	(KR)	(1e/L)	(1/90)	26/17	(130)	REMARKS
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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK 3 - ASSESSMENT OF DOT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES

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STREAM	MILE	LOCA 110N	DATE	LABID	(1/91)	(1/90)	(KB)	(1791) (1841) (1841) (1841)	(K &)	) (UG/L)	(7/9N)	(16A.)	REMARKS
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TENNESSEE RIVER	395.0	1 COM	100EC79	3M-34	<0.00	080.0>	<0.080	<0.080	<0°0<	<0°00	0000	004.0	<b>10</b> S
_	395.0	_	100EC79	34-35	<0.00	<0.00	<0.080	<0.00	<0°0>	<0.00	00000	0040	7

A. NOS - COMPOSITE WATER SAMPLES PREPARED BY COMPOSITING EQUAL VOLUMES TAKEN FROM ONE FOOT OFF THE BOTTOM FROM FIVE (OR FOUR)

EQUIDISTANT POINTS ALONG A CROSS-SECTION.

B. FWC - COMPOSITE WATER SAMPLES PREPARED BY COMPOSITING DEPTH INTEGRATED SAMPLES TAKEN FROM FOUR EQUIDISTANT POINTS ALONG A CROSS-SECTION.

C. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO.

D. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE. FOOTNOTE S:

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAHINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABANA

- ASSESSMENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES

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COMP 60EC79 3H-29	EC79 3H-29		~	<b>60.09</b> 0	<0°0>	<b>000.0</b>	080.00	<b>0000</b>	<0.00	00000	0010	Ã
3 COMP 60EC79 3M-18	EC79 3M-18		•	<b>60.080</b>	<b>080.0</b>	<0.090	<b>00.00</b>	<b>0000</b>	<0.00	0000	004.0	SOR
3 COMP 6DEC79 3M-19	EC79 3M-19		•	<b>090.0</b> 0	<b>080*0</b>	8 9 8	080.0>	<0.00	<0.00	000	0.400	Ŧ
5 COMP 6DEC 79 3M-20	EC 79 3F-20		•	<0.080		<b>6.08</b> 0	<0.0%	<0.0×	0 <b>0</b> 000	001.0	0.420	<b>88</b> 2
5 COMP 6DEC79 3M-21	EC79 3H-21			<0.00		00000	<0.00	<b>6 6 6</b>	<0.0×	0000	00400	7
COMP 6DEC79 34-22	EC79 34-22			00000		080-0>	080.00	<b>00.0</b> 0	<0.040	00000	004.0	NBS.
COM 6DEC 79 3M-23	EC 79 3M-23		•	00°0	<b>0000</b>	<b>0000</b>	<0.00 0.00	<b>0.0</b> 00	<b>00.0</b>	000.0	0010	FWC
60EC79	DEC 79	3M-26		<0.00	080.0>	· 000°0>	00°0	<b>&lt;0.0</b>	<b>6.80</b>	0000	004.0	MBS
COMP 60EC 79	DEC 79	34-27		<0.00	00°0>	<0.080	080-0>	<b>00.0</b>	<b>00.0</b> 0	0000	0	FWC
COMP 140EC 79	DEC 79	34-01		<0.00 080		0.450	0.380	0.061	0.078	1.089	1.169	Sex
314-0 COMP 14DEC79 3M-02	)EC79	3M-02		0000		080.00	980.0	<b>00.0</b>	<0.040 0.040	980-0	904-0	FEC
6/13041	200	64-CO		080*0>	•	280*0	0.110	00°0×	0000	0.192	0.432	<b>28</b> 5
1406079	EC79	3H-06		<0.00		080°0>	0000	<b>0.0</b> 00	0°0°	000	0000	T.EC
COMP 140EC79	EC 79	331-06		<0.00		<b>0000</b>	080.0>	<b>0000</b>	0.0°	0000	0.400	NB S
1406179	200	0 - K		090*0>	•	00°0>	090.0	000	0000	0000	0000	Ž.
60EC79	EC 79	3M-10		0000	090.09	0.130	0.170	<b>0000</b>	<b>0000</b>	0.300	0.540	NBS
COMP 60EC 79	EC 79	3M-11		<0.00	<0.090	<b>080°0</b> >	<0.080	<0°0	<0.00	0000	0.400	FWC
COMP 6DEC79	EC19	3M-12		<0.080 <0.080	0 <b>9</b> 0°0>	760.0	0.120	<0°0	0.00	0.214	0 454	NBS
COMP 60EC79 34-13	EC 79 34-13		•	<0.080	<0.080 <0.080	<0.080	<b>000.0</b> 0	<b>0000</b>	00000	0000	00000	FWC
COMP 606C79 3M-16	EC79 3M-16			<0°0>0	090°0>	<b>000-0</b>	<0.00	<0.040	0 50 %	00000	00400	202
COMP 6DEC79	EC79	3H-17		<b>&lt;0°0</b>	000000	000000	090.0>	<b>00.0</b> 0	<0°0	00000	0.400	Fic
COMP 100EC 79	EC 79	34-32		<b>090-0</b>	0 90 0>	<0.080	<0.00	<0°0	<0.00	00000	0000	NBS
COMP 100 EC79	EC79	34-33		<b>080°0</b> >	9000	060-0>	<0.00 0.00	0.0 v	0 \$ 8 >	00000	00400	Fic
COMP 100EC79 3M-	EC79 34	34-34		<0°00	<0°0>	<0.0>	<0.090	<b>0000</b>	00000	0000	00400	S E S
395.0 COMP 100EC79 3M-35	EC79 34-	34-35		<0.080	090.0>	<0.00	<0.080	<0.040	<0.040	00000	004.0	FWC

A. NBS - COMPOSITE WATER SAMPLES PREPARED BY COMPOSITING EQUAL VOLUMES TAKEN FROM ONE FOOT OFF THE BOTTOM FROM FIVE (OR FOUR)
EQUIDISTANT POINTS ALONG A CROSS-SECTION.
B. FWC - COMPOSITE WATER SAMPLES PREPARED BY COMPOSITING DEPTH INTEGRATED SAMPLES TAKEN FROM FOUR EQUIDISTANT POINTS ALONG A

C. MINIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. D. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTANINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS MUNEELER RESERVDIR, ALABAMA

TASK 3 - ASSESSMENT OF DOT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES

REMARKS									NO SAMPLE	NO SAMPLE																										MO SAMPLE	TO SAMPLE	NO SAMPLE		-								
DOTR—— NAX IMUN (UG/G)	•	•	•	•	, (	0.140	•	•	•	•	•	0.140	•	•	•	•	•	0.140	•	•	•	•	•	0.140	•	•	•	•	•		• •	•	•	•	0	•	•	•	• •	• •	• •	• •	• •	• ,	0,140	•	•	•
TOTAL MINIMUN (UG/G)	•	•				000	•	•	•	•	•	0000	•	•	•	•	•	00000	•	•	•	•	•	0000	•	•	•	•		3	• •	•	•	•	0000	•	•	• '	• •	• •	• •	• •	•	•	000	•	•	•
SED 1 NENT DOE-P, P (UG/G)	•	•	•	•		<0.010	•	•	. •	•	•	<0.010	•	•	•	•	•	<0.00	•	•	•	•	•	<b>010°</b> 0>	•	•	•	•	•	010.0	• •	•	•	•	010-0>	•	•	•	• (		• •	•	• •	• (	<0.010	•	•	•
	•	•	•	•	•	<0.050	•	•	•	•	•	<0.00	•	•	•	•	•	0000	•	•	•	•	•	<b>40.050</b>	•	•	•	•	•		• •	•	•	•	96.69	•	•	•	• (	• •	• (	• •	• •	•	<0.050	•	•	•
DOT MEASURED IN DOD-P,P DDE-O,P (UG/G) (UG/G)	•	•	•	•	•	<0.020	•	•	•	•	•	<0.020	•	•	•	•	•	<0.00	•	•	•	•	•	<0.00	•	•	•	•	•	070.0	. •	•	•	•	<0.00 °0.00	•	•	•	• (	• •	• •	, (	• •	• •	<0.020	•	•	•
	•	•	•	• •	•	<0.020	•	•	•	, •	•	<0.020	•	•	•	•	•	020*0>	•	•	•	•	•	<0.020	•	•	•	•	•	070.0	• •	•	•	•	070.00	•	•	• •	• •		• •	, (	• •	•	05، ۲۵		•	•
TOTAL CONCENTRATIONS OF DOT-0,P DOD-0,P (UG/G) (UG/G) (UG/G)	•	•	•	•	•	<0.020	•	•	•	•	•	<0.00	•	•	•	•	•	070*0>	•	•	•	•	•	<0.00	•	•	•	•	•	0.000	• •	•	•	•	07000	• •	•	• •		•	•	•		• •	<0.020	•	•	•
TOTAL CONCENTRATIONS OF DOT-0,P DOD-0,P (UG/G) (UG/G) (UG/G)	•	•	•	•	•	<0.020	•	•	•	•	•	020*0>	•	•	•	•	•	<0.00°0	•	•	•	•	•	<0.020	•	•	•	•	•	70.0%		•	•	•	070-03	• •	•	• •	•	•	•	•	•	• •	<0.020	•	•	•
LABID			_	_	_	3-045			_			3-038	_		_	_		970-6					-	3-0-5	_				000-6	-		_	_	,					_		_	_	_	_	3-020		_	_
DATE	2AUG79	2A UG79	2AUG79	2AUG 79	2AUG79	2AU679	2AUG79	2 AUG 79	2A UG 79		2A UG 79	2AUG79			2AUG79				ZAUGIO	•.					2A UG 79				241679					2A UG 79	A A COLOR					1A UG 79				1416.79	140679		1A UG 79	1A UG79
HORI ZONTAL LOCATION	17	34	15	89	8	COMP	11	34	2	89	82	8 MB	17	<b>*</b>	15	89	82			<b>f</b> ;	7	•		. ن						17	<b>*</b>	15	69	£ 6	È :	7 7		. 5	8.5	11	34	51	8	35	COMP	17	34	51
HILE	3.8	3.6	-		_	_	_	7.7	7.7	7.7	7.7	7.7	0.0				0.0		0.01	9.0	9.0		0.0	10-0	15.0	15.0	15.0	200	12.0		6.7	6.7	6.7			1 3 - 4 I	12.2	12.4	13.3						•		2.5	2.5
		CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	CREEK	# F F	- E	/ER	/ER	VE R	X C	¥ 4	ž.	F	F 1	rr Se	/ER	Z.	E E	Y .	IVER	RIVER	REFE	REEK	CREEK .	REEK	CREEK	וצענצ האינג				REEK	LIVER	IVER	IVER	RIVER	ATVER	R 1	R.	RIVIA	ıver
STREAM	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	CATACO	ELK RIVE	=	~		ELK RIVE				ELK PIVE				ELK RIVE				ELK RIV	FLINT			FLINT						FLINT		FLINT				FLINT			FLW1 &

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CB. K., AND ADJACENT LANDS AND MATERS MUNTSVILLE SPRING BRANCH, INDIAN CB. K., AND ADJACENT LANDS AND MATERS

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TASK 3 - ASSESSMENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-MIDE FISHERIES STUDIES

-	0 404	435 C3 SATE				OF NI C	) C E	CARE ST CE		AKEA TE IDE	FI SHEALE S	Salueles	
STREAM	MILE	HORI ZONTAL LOCATION	OATE.	74810	107AL CO 201-0,P (UG/G)	107al CONCENTRATIONS OF DD1-0,P DD0-0,P (UG/G) (UG/G) (UG/G)		DOT MEAS 000-P.P.	ASURED IN P DDE-0.P ( (G/G)	SEDIMENT DOE-P.P (UG/G)	MINIMUM FUG/6)	MAXINUM (UG/G)	REMARKS
FLINT RIVER	2.5	99	140679		•	•	•	•	•	•	•	•	
•	2.5	85	1AUG79		٠	•	•	•	•	•	•	•	
£	2.5		1AUG79	3-055	<0.00	<0.00	<0.00	<0.00	<0.00	<0.000	00000	0-140	
			2AUG79		•	•	•	•	•	•	•	•	
1 IMESTONE CREEK			2AUG79		•	•	•	•	•	•	•	•	
		7 84	241619		• 1	• •	•	•	• '	•	•	•	
	7.5	,	241E70		• (	• (	• (	• (	• (	• •	• •	• (	
STONE	1:5		24679	3-034	<0°0>	<0.020	<0.020	0-020	<0.050	0=030	0.050	0-160	
STONE	3.0		2AUG79	3	•	•	•	•	•	•	•	•	
LINESTONE CREEK	3.0	6	2AUG79		•	•	•	•	•	•	•	•	
STONE	M .		2AUG 79		•	•	•	•	•	•	•	•	
LINESCONE CREEK	0 6	27 M	2AU679		•	•	•	•	•	•	•	•	
STONE			241579	3-0-6	<b>60.020</b>	<0.0×0×	<b>40.020</b>	020	0.050	0.030	9	0.160	
_	1.9		140679	,	•	•		•	•		} .		
ROCK	1.9	•	LAUG79		•	•	• •	•	•	•	•	•	
Š	1.9		1 AUG79		•	•	•	•	•	•	•	•	
3 <u>9</u>	1.9	99	1AUG79		•	•	•	•	•	•	•	•	
1 1 1			<b>1AUG79</b>		•	•	•	•	•	•	•	•	
20C	1.9	_	1AUG79	3-016	<0.00	<0.020	<b>020°0&gt;</b>	<0.020	<0.050	<0.010	0000	0-140	
PAINT ROCK RIVER	<b>6</b> (	-	1AU679		•	•	•	•	•	•	•	•	
	9.0		IAUG79		•	•	•	•	•	•	•	•	
	D .		141679		•	•	•	•	•	•	•	•	
	7 0	2 4	140679		•	• 1	•	•	•	•	•	•	
			141679	5		00,07	.00	.00	6	•	0.00	0-20	
G CRE	0		30.JUL 79		9	1000	0700	3 '	3	270.00			
	1.0		30.JC 79		•	• •	•	• •	•	•	•	•	
SPRING CREEK	1.0		30JUL79		•	•	•	•	•	•	•	•	
	0.		30 JUL79		•	•	•	•	•	•	•	•	
SPRING CREEK	• ·	- 65	30,101,79	•	•	•	•	•	•	•	•	•	
	- ·		30,000	3-001	<0.00	020.05	020*0>	020.0	<0.0	0.010	0.030	0*1*0	
	200		30.11 70		• •	• •	• •	• (	• •	• (	• (	• •	•
SPRING CREEK	2.0		30 JOL 79		•	•	٠.	•	•				
	2.0	99	30JUL79		•	•	•	•	•	•	•	•	
SPRING CREEK	2°0	3	30JUL79		•	•	•	•	•	•	•	•	
w.	2.0		3070179	3-003	0.030	0.030	0.030	0.050	<0.050	9.030	0.170	0.220	
	260.0		340679		•	•	•	•	•	•	•	•	
TEMPESSEE KIVER	260.0		340679		•	•	•	•	•	•	•	•	
	240.0	10	341670		•	•	•	•	• '	•	•	•	
 -	260.0		344679		• (	• (	• (	• (	• (	• (	• (	• (	
	260.0		3AUG79	3-039	<0.020	<0.020	80.08	0.030	<0.050	0.020	0.050	0.160	
ENNESSEE	265.0		30JUL79	!	•	•	•	•	•	•	•	•	
RI VE	265.0	•	30JUL79		•	•	•	•	•	•	•	•	
3	265.0	•	30 JUL 79		•	•	•	•	•	•	•	•	
TEMPESSEE RIVER	265.0	_	3030179		•	•	•	•	•	•	•	•	
KIK	702.0	Ð	3070179		•	•	•	•	•	•	•	•	

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK 3 - ASS 6.5MENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-LIDE FISHERIES STUDIES

CONTRIBUTED STATES AND		<u>.</u>	HOR I ZONTAL	L 2476		TOTAL CONCENTRATIONS OF DOT-0,P DOT-0,P DOT-0,P	TOTAL CONCENTRATIONS OF DOT-0,P DOT-0,P DOT-0,P	10NS OF 2000	DOT MEASURED IN DOD-P.P DOE-O.P	URED IN	SEDIMENT ODE-P.P	MINIMUM	MAKIMUM	1 1 1
34 30JUL79 30JUL77 30J				•	7					3		6 / 90		CHARRY
11 30UUT79 55 30UUT79 56 30UUT79 57 30UUT79 58 30UUT79 58 30UUT79 58 30UUT79 59 30UUT79 50 30UUT79	I VER 265.0		COMP	30.JUL 79	3-005	<0.00	<0.00	0-050	0.030	<0.00	0.030	0.080	0.170	
34 30JUL779 51 30JUL779 52 30JUL779 52 30JUL779 53 30JUL779 54 30JUL779 55 30JUL779 56 30JUL779 57 30JUL779 58 30JUL779 58 30JUL779 59 30JUL779 59 30JUL779 59 30JUL779 59 30JUL779 50 30J	270	-	71	30JUL79		•	•	•	•	•	•	•	•	
\$1 30JUL79 30J	270	-	34	30,70,79		•	•	•	•	•	•	•	•	
6.8 30.04179 30.41779	~			30JUL79		•	•	•	•	•	•	•	•	
COMP   30-JUL7   3-006				3000179		•	•	•	•	•	•	•	•	
174 30JULT79 3-006 <0.0220 0.0220 0.0320 0.0330 0.0990 0.0170 30JULT79 30JULT79 3-008 <0.0220 0.0220 0.040 0.0550 0.0330 0.0990 0.1170 30JULT79 3-008 <0.0220 0.0220 0.040 0.0550 0.0330 0.0990 0.1800 31 30JULT79 3-008 <0.0220 0.0220 0.040 0.0500 0.030 0.0990 0.1800 31 30JULT79 3-009 <0.0220 0.0220 0.040 0.040 0.0500 0.030 0.1900 31 31JULT79 3-011 <0.0220 <0.0220 0.0330 0.040 0.0320 0.1900 0.1900 31 31JULT79 3-012 <0.0220 0.0220 0.0330 0.040 0.030 0.1000 0.1900 31 31JULT79 3-012 <0.0220 0.0220 0.0330 0.040 0.0300 0.1000 0.1900 31 31JULT79 3-013 <0.0220 0.0220 0.0330 0.040 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 0.0220 0.0330 0.040 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 0.0220 0.0330 0.040 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 0.0220 0.0320 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0030 0.040 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0030 0.040 0.0030 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0030 0.0000 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0030 0.0000 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.1900 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.1000 0.1000 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.1000 0.1000 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.1000 0.1000 0.1000 31 31JULT79 3-013 <0.0220 <0.0220 0.0000 0.0000 0.0000 0.100	~		8	3010179		•	•	•	•	•	•	•	•	
11.7 30JUL73 34. 30JUL73 36. 30JUL73 36. 30JUL73 37. 3	ċ		8	30,0179	3-006	<0.020	<0°0>	0.020	0.030	<0.00	0.030	0000	0.130	
34 300UL79 56 300UL79 57 300UL79 58 300UL79 58 300UL79 59 300UL79 59 300UL79 59 300UL79 50 300UL79	275.			3010179		•	•	•	•	•	•	•	•	
51 300UL79 52 300UL79 53 300UL79 54 300UL79 55 300UL79 56 300UL79 56 300UL79 57 300UL79 58 300UL79 58 300UL79 59 300UL79 59 300UL79 59 300UL79 50 300UL79	275.			30JUL79		•	•	•	•	•	•	•	•	
0.00	VER 275.0			30JUL79		•	•	•	•	•	•	•	•	
66 30JUL79 30JUL79 31 30JUL79				30,141,79		•		•	•	, (	, (	, (	•	
36.00 10 10 10 10 10 10 10 10 10 10 10 10 1	VER 275.0			30,1111 79		•	•	, ,	• (	• (	•	•	• •	
34 30JUL79 51 30JUL79 52 30JUL79 53 30JUL79 54 30JUL79 55 30JUL79 56 30JUL79 57 3JUL77 57 3JUL79 58 3JUL79 58 3JUL79 59 3JUL79 50 3JUL79 51 3JUL79 52 3JUL79 53 JUL77 53 JUL77 54 3JUL79 55 3JUL79 56 3JUL79 57 3JUL79 58 3JUL79 58 3JUL79 59 3JUL79 50 3JUL79 50 3JUL79 50 3JUL79 50 3JUL79 51 3JUL79 51 3JUL79 52 3JUL79 53 JUL77 54 3JUL79 55 3JUL79 56 3JUL79 57 3JUL79 58 3JUL79 58 3JUL79 59 3JUL79 50			3	30.118.79	3-008		0.00	0-020	0,0		0.0	0	0.180	
35. 30JUL79 35. 30JUL79 36. 30JUL79 37. 30JUL79 37. 30JUL79 37. 30JUL79 37. 31JUL79 37. 31			2	30.11179	)									
51 30JUL79 3-010 COMP 3JUL79 3-010 COMP CO.020 0.030 0.040 CO.050 0.030 0.190 0.190 117 11JUL79 3-010 COMP 3JUL79 3-011 CO.020 CO.020 0.030 0.040 CO.050 0.030 0.100 0.190 117 11JUL79 3-011 CO.020 CO.020 0.030 CO.050 0.030 0.100 0.190 117 11JUL79 3-012 CO.020 CO.020 0.030 CO.050 0.020 0.030 0.100 0.190 117 11JUL79 3-012 CO.020 CO.020 0.030 CO.050 0.020 0.030 0.100 0.190 117 11JUL79 3-012 CO.020 CO.020 0.030 CO.050 0.020 0.030 0.040 CO.050 0.020 0.030 0.180 11JUL79 3-013 CO.020 CO.020 0.030 0.040 CO.050 0.020 0.030 0.180 11JUL79 3-014 CO.020 CO			-			• •	• •	• •	• (	•	•	•	• •	
68 30JUL79 31JUL79 31J		. •		20 111 76		•	•	•	•	•	•	•	•	
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ENGINEERING AND ENVIRONENTAL STUDY OF DOT CONTANIMATION WUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WORK, ALABAMA

TASK 3 - ASSESSMENT OF DDT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-HIDE FISHERIES STUDIES

FOOTWOTES: A. MORIZONTAL LOCATION OF INDIVIDUAL SAMPLES REFERS TO PERCENT DISTANCE FROM THE LEFT BANK LOOKING DOWNSTREAM. B. ABSENCE OF DATA FOR INDIVIDUAL SAMPLES INDICATES ANALYSES WERE PERFORMED ON THE COMPOSITE OF THE INDIVIDUAL SAMPLES. C. MINIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

## ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

185K 3 - ASSESSMENT OF DOT CONCENTRATIONS IN SEDIMENTS CORRESPONDING TO AREA-WIDE FISHERIES STUDIES

				,	•		SEDIM	<b>15</b>	MPLES .	AMPLES - PHYSICA	L MEA	SUREMENT					
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FOOTNOTES: A. HORIZONTAL LOCATION (HLOC) OF INDIVIDUAL SAMPLES REFERS TO PERCENT DISTANCE FROM THE LEFT BANK LOOKING DOWNSIREAM. B. ABSENCE OF DATA FOR INDIVIDUAL SAMPLES INDICATES ANALYSES WERE PERFORMED ON THE COMPOSITE (COMP) OF THE INDIVIDUAL SAMPLES. C. THE ABBREVIATION (P.S.) REFERS TO A PRECISION SAMPLE.

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS, WHEELER RESERVOIR, ALABAMA

### TASK 4

ASSESSMENTS OF DDT CONCENTRATIONS
AND OTHER CONTAMINANTS IN SEDIMENTS
IN REDSTONE ARSENAL VICINITY

Tennessee Valley Authority Office of Natural Resources

August 1980

### PREFACE

This document was prepared in support of the Engineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

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Transect	Cross-sections and Procedures	•			•						Appendix B
Raw Data	Tabulations										Appendix C

TASK 4
WORKTASK DESCRIPTION

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### ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

### 1.0 Purpose

To better define the areal extent of the DDT contamination and to define the physical characteristics of the sediment as they may relate to remedial measures and to evaluate the potential for the occurrence of other pollutants in the bottom sediment.

### 2.0 Scope

Sediment samples were collected from Indian Creek (IC) and Huntsville Spring Branch (HSB). This included sampling in the channel, overbank and swampy areas, and on the floodplain.

### 3.0 Procedure

### 3.1 Types of Samples

Sediment and water.

### 3.2 Sample Locations

- 3.2.1 Cross sections are located at the following nominal locations:

  Indian Creek Miles 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 and Huntsville

  Spring Branch Miles 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0, where

  Huntsville Spring Branch enters Indian Creek at mile 5.4, and

  where the DDT waste ditch (old ditch) enters HSB at mile 5.37

  (see sampling location maps in Appendix A).
- 3.2.2 At each sampling transect a detailed and complete probe sounding was made of sediment depth and a cross section drawn to scale for the record (see Appendix B). The horizontal location of core samples was selected in the field from the soundings to adequately

- represent the sediment deposit. Core samples were collected only in locations where sediment was found. Multiple horizontal locations were sampled to keep distances between sampling locations to approximately 50 feet.
- 3.2.3 Additional transects were sampled in swampy areas at HSB miles 1.7, 3.5, 4.2, 4.5, 5.6, and approximately midway on the horseshoeshaped "loop" opposite the DDT waste ditch. Sampling locations (cores) at the transects at HSB miles 1.7 and 3.5 were taken at approximately 100-foot intervals. At HSB miles 4.2 and 4.5, approximate 200-foot intervals were used. HSB mile 5.6 and the "loop" transect were at 50-foot intervals.
- 3.2.4 In addition to the transects described above, eight miscellaneous sampling locations were located in normally inundated locations:

  Barren Fork Creek (approximate mile 1.2), the slough on the left bank adjacent to IC mile 1.0, the slough on the left bank adjacent to IC mile 2.0, and five locations selected in the field in the vicinity of the mouth of the present and old DDT waste ditch.

  The purpose of the five locations selected in the field was to locate "hot spots," such as old "DDT bars."
- 3.2.5 Eleven additional sampling locations were established in floodplain areas not normally inundated.
- 3.2.6 At the beginning of the field work, an anchored marker buoy was placed at each cross section and sampling location. Following sample collection, an aerial inspection was made to verify and document actual sampling locations.

### 3.3 Field Collection

- 3.3.1 At each sampling location a minimum of three cores were collected to help ensure that samples are representative. Cores were collected approximately three feet apart.
- 3.3.2 All core samples were subdivided into separate and distinct horizontal fractions—the top 6 inches, the second 6 inches, the second foot, and anything greater than the second foot. One quart of sediment was provided for each of the separate core portions. (To obtain the required volume for the individual samples, composites from more than the minimum of three cores may have been required.) The sediments from each corresponding portion of the multiple cores composited were mixed well to ensure a representative sample was collected. This compositing was done in the field.
- 3.3.3 A 2-gallon water sample was collected at each sampling location where elutriate analyses were performed. See Section 3.5.4 for the identification of these locations. Where applicable, these samples were collected from 1 foot off the bottom. In shallow and swampy areas with water depths six inches or greater, the 2-gallon water sample was collected by the best means available.
- 3.3.5 At those core sampling locations where the collection of water samples was not feasible or appropriate, water for the elutriate tests were collected at a point on the creek nearest the core sampling location.

### 3.4 Sample Handling

3.4.1 Sediment samples were collected in 1-quart glass containers (mason jars) specially cleaned for pesticide analysis. Container lids were lined with aluminum foil.

- 3.4.2 Water samples for elutriate tests were collected in specially prepared glass bottles. A minimum of two gallons were required per sample.
- 3.4.3 All sediment and water samples were placed on ice and kept at  $4^{\circ}$ C through transportation to the laboratory.

### 3.5 Sample Analysis

- 3.5.1 From the individual samples collected at each of the transects identified in Sections 3.2.1 and 3.2.3, composites were made in the laboratory of the 0-6 inch fractions, 6-12 inch fractions, 12-24 inch fractions, etc. A sufficient quantity of each individual sample was retained for possible later separate analysis. From these composites, analyses were made for particle size distribution (>2.0 mm to <0.25 mm), % moisture, % volatile solids, and DDTR. Additionally, separate analyses were initially made on 24 individual samples from the transect at HSB mile 4.2. These separate samples were taken from each of the four vertical locations at six equally spaced sampling locations. Additional DDTR analysis was performed on individual or differently composited samples. These additional samples are listed in the attached table 4-2.
- 3.5.2 For each of the eight additional stations (Section 3.2.4) below the 556-foot elevation, one laboratory depth-integrated composite was made. From these composites, analyses were made of particle size distribution, % moisture, % volatile solids, and DDTR.
- 3.5.3 For each of the eleven floodplain samples identified in Section 3.2.5, the 0-6 inch fraction was initially analyzed for particle size distribution, % moisture, % volatile solids, and DDTR. The remaining fractions were retained for possible later analysis.

- 3.5.4 Initially, 15 elutriate analyses were performed on the sediments collected from the locations described at the following points; ICM 1 and 3; HSBM 0, 2, 3, 4.2, 4.5, 5.0, and 5.6; and the five locations in the vicinity of the old waste ditch as identified in Section 3.2.4. The elutriate samples consisted of a composite of the individual sediment samples collected at the cross section or sampling location.
- 3.5.5 Laboratory analyses associated with the elutriate tests were DDT,

  Hg, Cd, Cu, Zn, Ni, Be, and As. These analyses were performed on
  the sediment and water samples collected for elutriate tests as
  well as on the elutriate water resulting from the tests.
- 3.5.6 In addition to the elutriate analysis for the samples from ICM 3.0 and HSBM 3.0, EPA's priority pollutants were analyzed. For these analyses, the samples at each mile point consisted of a composite of the top 6-inch sediment sample across each stream mile point. The priority pollutant scans were made on the overlying water, the composited sediment sample, and the elutriate water. The analysis of the priority pollutants was a qualitative scan with identification of the major peaks on the chromatograms.
- 3.5.7 All analyses were performed by procedures described in the Quality Assurance document.

### 3.6 Data Handling and Reporting

3.6.1 All data are summarized in a tabular form and presented in Appendix C. This table includes: Sample identification number, location, date collected, field measurements, and each of six forms of DDT and total residue concentrations.

TASK 4 - ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY TABLE 4.1 TOCATIONS

			3	Sampl	e Numb	er and	Dist	Duce (	feet)	Taken F	Core Sample Number and Distance (feet) Taken From Left Bank	t Bank							
	Mile	-	2	5	4	2	٠	7	*	6	91	=	12	13	97	15	97	11	97
Indian Creek	0.0	32	1	•	ı	,	•	1	•	•	•	ı	1	ı	1	1	ı		ı
z	1.0	37.5	87.5	137.5	1	ı	•	ı	•	ı	1	ı	•	1	1	1	1	•	•
=	2.0	55	100	160	ı	ı		•	1	ı	ı	1	1	,	ı	1	•	•	•
2	3.0	25	7.5	125	175	ı	1	ı	ı	ı		•	ı	•	ı	ι	1	٠	•
=	0.4	20	130	180	230	280	ı	1	ŀ	1	ł	f	i	ı	ı	1	1	1	1
=	5.0	130	250	300	ı	ı	ı	•	ı	•	•	•	1	•	ı	ı	,		•
H-ville Spg. Br.	0.0	37	75	•	•		•	1	ı	ı	•		•	•	•				1
=	1.0	90	180	330	1	ı	•	ı	ı	•	1	1	1	•		•	1	•	•
•	1.7	290	390	067	290	815	915	1015	1075	1	ı	ı	ı	,	•	•	1	ı	٠
:	2.0	54	7.5	ı	ı	ı	1	1	•	•	ı	•	1			•	ı		1
z	3.0	65	175	300	ı	ı	1	1	•	i	•	•	•	ı	•	ı	ı	•	•
=	3.5	20	300	400	200	900	200	330	930	1030	ı	ı	•	•		•	•		•
£	6.0	277	388	595	ı	ı	•	ı	•	•	•	,	ı	ı	ı	•	•	•	•
£	4.2	248	877	849	878	1048	1253	1453	1653	1853	2032	2232	2432	2632	2832	3032	3058	3232	3462
=	4.5	0	200	400	009	800	1000	1200	1400	091	1621	30C	1875	2105	2300	1	•	1	1
*	5.0	882	32	,	•	ı	•	1	1	ı	ı	•	1	,	•	ı	•	,	1
•	5.6	89	118	166	•	•		•	1	•	ı	•	1	ı	•			1	•
H-ville Spg. Br. Loop		28	100	143	ŀ	ı	•	•	,	,	•	•	•	•	,	•	•	1	•

Table 4-2: Additional Individual and Composited Sample Analyzed for DDTR

Samp	le #	<u>L</u> a	ocation			Core Sample Location Number from Left Bank	Core Fraction	Notes
DDT	4-141	Huntsville	Spring	Branch	1.0	1	0-6"	
TQQ	4-142	f1	• "	"	11	1	6-12"	
DDT	4-143	11	11	11	**	1	12-24"	
DDT	4-181	11	11	**	11	3	0-6"	
DDT	4-182	**	11	11	**	3	6-12"	
DDT	4-183	**	"	**	**	3	12-24"	
DDT	4-184	**	11	**	**	3	>24"	
TQQ	4-144	Huntsville	Spring	Branch	1.7	1	0-6"	
DDT	4-145	11	٠,,	**	11	1	6-12"	
DDT	4-146	**	**	"	**	2,3&4	0-6"	Composite
DDT	4-147	11	**	**	**	2,3&4	6-12"	H
DDT	4-148	**	11	**	**	5&6	0-6"	**
DDT	4-149	11	**	**	**	5&6	6-12"	27
DDT	4-150	**	11	**	**	5&6	12-24"	11
DDT	4-151	**	**	11	**	7	0-6"	
DDT	4-152	**	11	**	**	7	6-12"	
DDT	4-153	11	***	**	**	7	12-24"	
DDT	4-154	**	11	**	11	8	0-6"	
DDT	4-155	**	11	11	**	8	6-12"	
DDT	4-156	**	*1	**	**	8	12-24"	
DDT	4-157	**	**	**	11	8	>24"	
TOO	4-158	Huntsville	Spring	Branch	3.0	1	0-6"	
DDT	4-159	**	- 11	11	**	1	6-12"	
DDT	4-160	**	**	**	**	1	12-24"	
DDT	4-161	**	11	11	11	1	>24"	
DDT	4-162	**	**	**	**	3	0-6"	
DDT	4-163	**	**	11	11	3	6-12"	
DDT	4-164	**	**	11	**	3	12-24"	
DDT	4-165	Huntsville	Spring	Branch	3.5	1	0-6"	
DDT	4-166	**	""	**	**	2	0-6"	
DDT	4-167	**	**	**	**	2	6-12"	
DDT	4-168	**	11	11	**	3&4	0-6"	Composite
DDT	4-169	**	**	11	**	3&4	6-12"	11
DDT	4-170	11	11	11	**	5&6	0-6"	11
DDT 4	4-171	**	11	11	11	5&6	6-12"	11
DDT	4-172	11	**	11	11	7&8	0-6"	*11
DDT 4	4-173	11	11	**	**	7&8	6-12"	**
DDT -	4-174	**	**	11	**	7&8	12-24"	**
DDT	4-175	Huntsville	Spring	Branch	4.0	1	0-6"	
DDT	4-176	**	*"	11	**	1	6-12"	
DDT	4-177	**	**	"	**	2	0-6"	
DDT -	4-178	**	**	**	**	2	6-12"	
DDT 4	4-179	**	**	**	**	2	12-24"	

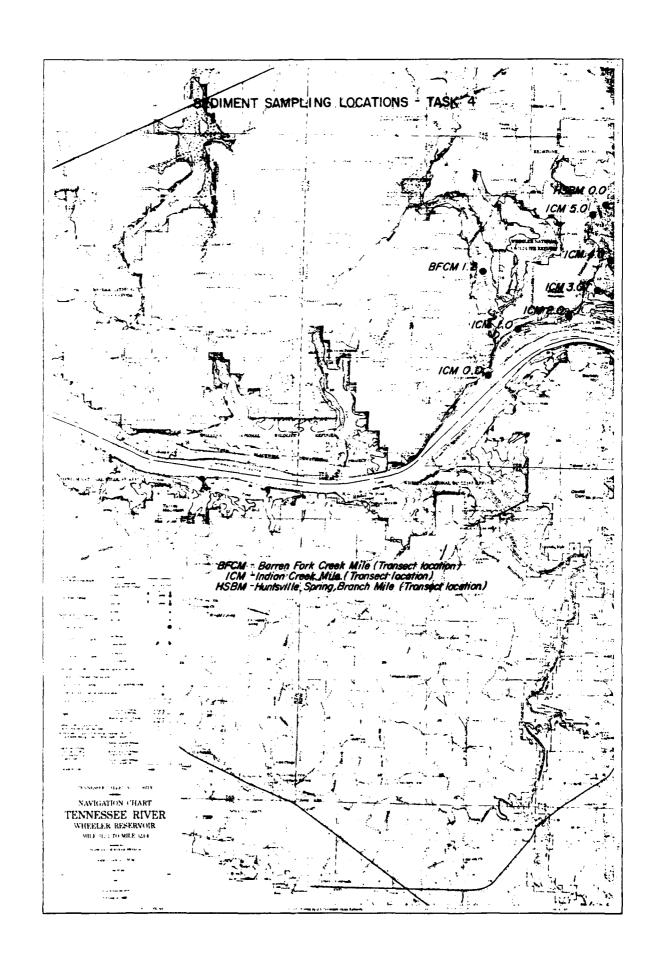
						Core Sample		
						Location	C +	
G	- 1 "					Number from	Core	Nat
Sam	ele #	Lo	ocation			Left Bank	Fraction	Notes
DDT	4-180	Huntsville	Spring	Branch	3.5	2	>24"	
DDT	4-185	*1	11	17	**	3	0-6"	
DDT	4-186	**	**	17	*1	3	6-12"	
DDT	4-187	**	**	11	**	3	12-24"	
DDT	4-188	Huntsville	Spring	Branch	4.5	1	0-6"	
DDT	4-189	**	11	**	**	2	0-6"	
TOO	4-190	**	**	11	**	2	6-12"	
DDT	4-191	*1	11	11	**	3	0-6"	
DDT	4-192	**	11	11	**	3	6-12"	
DDT	4-193	***	11	11	**	3	12-24"	
DDT	4-194	**	**	11	"	4,5&6	0-6"	Composite
DDT	4-195	11	**	**	**	4,5&6	6-12"	11
DDT	4-196	11	**	**	**	4,5&6	12-24"	"
DDT	4-197	**	11	11	**	7&8	0-6"	**
DDT	4-198	**	17	**	"	7&8	6-12"	11
DDT	4-199	***	**	11	**	7&8	12-24"	**
DDT	4-200	**	**	**	**	9	0-6"	
DDT	4-201	**	11	**	"	10	0-6"	
DDT	4-202	**	**	11	**	10	6-12"	
DDT	4-203	11	11	**	**	10	12-24"	
DDT	4-204	**	11	**	**	11	0-6"	
DDT	4-205	**	11	17	**	11	6-12"	
DDT	4-206	11	17	11	**	11	12-24"	
DDT	4-207	11	**	11	**	12&13	0-6"	"
DDT	4-208	11	**	**	"	12&13	6-12"	**
DDT	4-209	11	11	**	**	12&13	12-24"	**
DDT	4-210	**	11	**	**	12	>24"	
DDT	4-211	**	"	**	**	14	0-6"	
DDT	4-212	**	11	**	**	14	6-12"	
DDT	4-213	**	11	*1	**	14	12-24"	
DDT	4-214	Huntsville				12	0-6"	
DDT	4-215	11	**	**	**	12	6-12"	
DUT	4-216	**	11	11	**	13	0-6"	
DDT	4-217	11	**	**	"	13	6-12"	
DDT	4-220	11	**	11	**	16	0-6"	
DDT	4-221	**	17	**	**	16	6-12"	
DDT	4-218	**	11	11	**	16	12-24"	
DDT	4-219	**	11	**	**	16	>24"	
DDT	4-222	11	**	11	**	17	0-6"	
DDT	4-223	11	11	**	**	17	6-12"	
DDT	4-224	**	**	11	11	17	12-24"	
DDT	4-225	11	**	**	**	18	0-6"	
DDT	4-226	11	11	**	*1	18	6-12"	
DDT	4-227	**	11	**	**	18	12-24"	

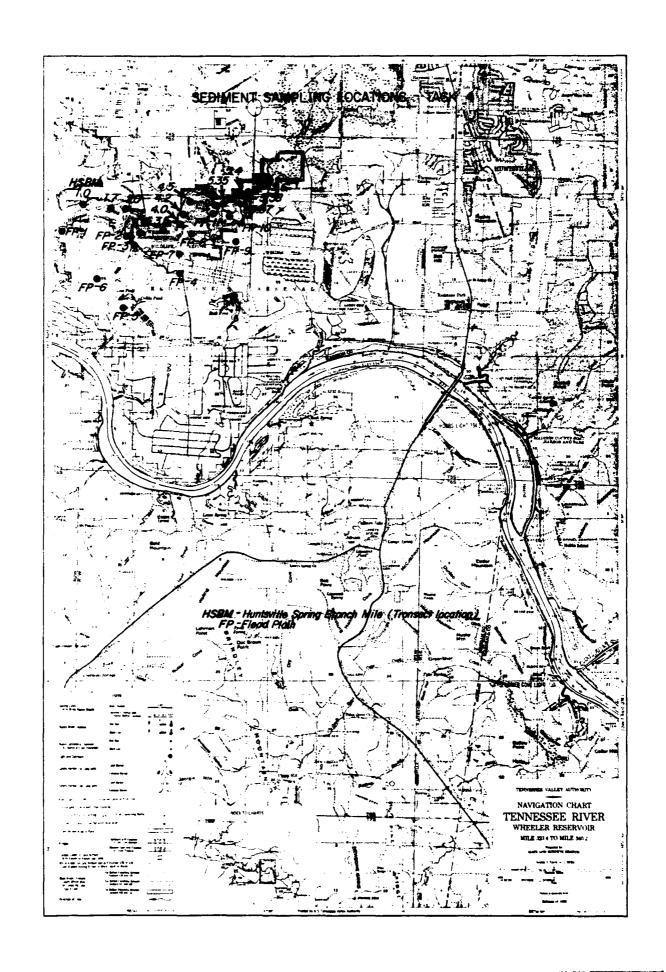
Sample #	Le	ocation			Core Sample Location Number from Left Bank	Core Fraction	Notes
DDT 4-228	Huntsville	Spring	Branch	5.0	1	0-6"	
DDT 4-229	11	• "	11	**	1	6-12"	
DDT 4-230	n	**	11	11	1	12-24"	
DDT 4-231	11	**	**	11	2	0-6"	
DDT 4-232	11	**	11	"	2	6-12"	
DDT 4-233	11	**	11	**	2	12-24"	
DDT 4-234	Huntsville	Spring	Branch	5.35	1	6-12"	
DDT 4-235	Huntsville	• •			1	0-6"	
DDT 4-236	tt	• • • •	**	**	1	12-24"	
DDT 4-237	11	**	11	*1	1	>24"	
DDT 4-238	Huntsville	Spring	Branch	5.41	1	0-6"	
DDT 4-239	11	.,	11	11	1	12-24"	
DDT 4-240	11	**	**	**	1	>24"	

APPENDIX A

TASK 4

SAMPLING LOCATION MAPS

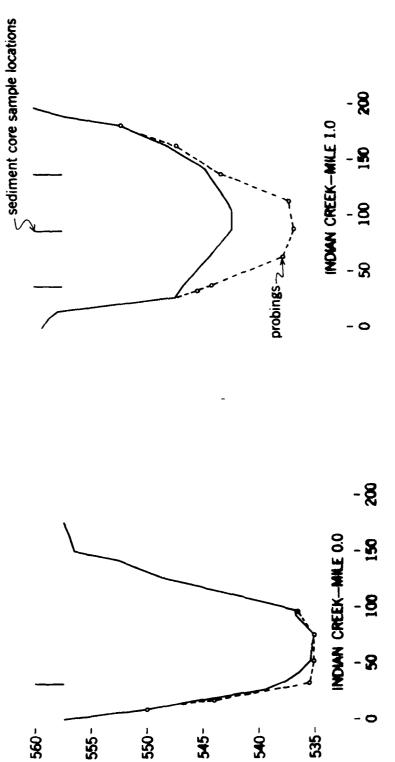




APPENDIX B

TASK 4

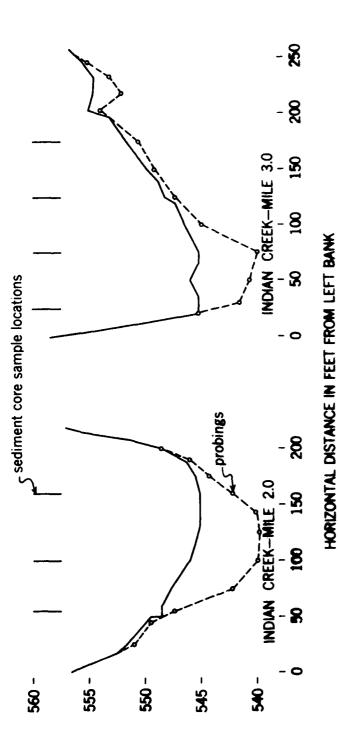
TRANSECT CROSS-SECTIONS AND PROCEDURES



ELEVATION IN FEET ABOVE MEAN SEA LEVEL

HORIZONTAL DISTANCE IN FEET FROM LEFT BANK

TENNESSEE VALLEY AUTHORITY
DATA SERVICES BRANCH
DDT STUDY IN VICINITY OF REDSTONE ARSENAL
SEDIMENT INVESTIGATIONS
AUGUST 1979
Sheet 1 of 10



ELEVATION IN FEET ABOVE MEAN SEA LEVEL

TENNESSEE VALLEY AUTHORITY

DATA SERVICES BRANCH

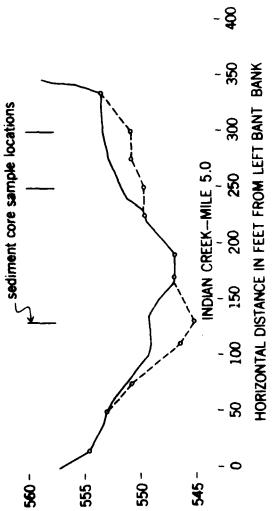
DDT STUDY IN VICINITY OF REDSTONE ARSENAL

SEDIMENT INVESTIGATIONS

AUGUST 1979

Sheet 2 of 10

INDIAN CREEK -MILE 4.0 probings 545 --260 -- 099 550 -555 -ELEVATION IN FEET ABOVE MEAN SEA LEVEL



DDT STUDY IN VICINITY OF REDSTONE ARSENAL TENNESSEE VALLEY AUTHORITY DATA SERVICES BRANCH SEDIMENT INVESTIGATIONS AUGUST 1979 Sheet 3 of 10

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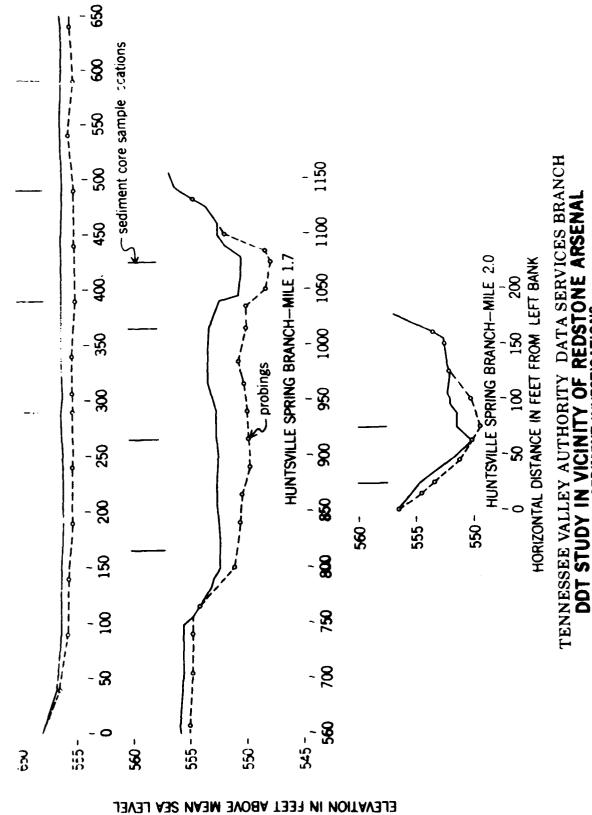
- 8 - 95 - 8 HUNTSVILLE SPRING BRANCH-MILE 1.0 - sediment core sample locations - 52 -8 - 120 2 probings - 8 - প্র HUNTSVILLE SPRING BRANCH-MILE 0.0 33 8 - ß 545 -- 999 550 -- 099 ELEVATION IN FEET ABOVE MEAN SEA LEVEL

### HORIZONTAL DISTANCE IN FEET FROM LEFT BANK

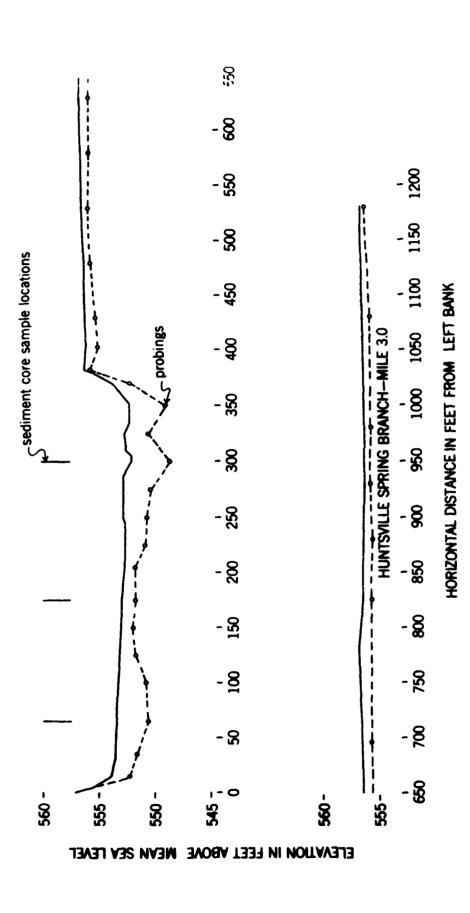
TENNESSEE VALLEY AUTHORITY
DATA SERVICES BRANCH

DDT STUDY IN VICINITY OF REDSTONE ARSENAL SEDIMENT INVESTIGATIONS

AUGUST 1979 Sheet 4 of 10

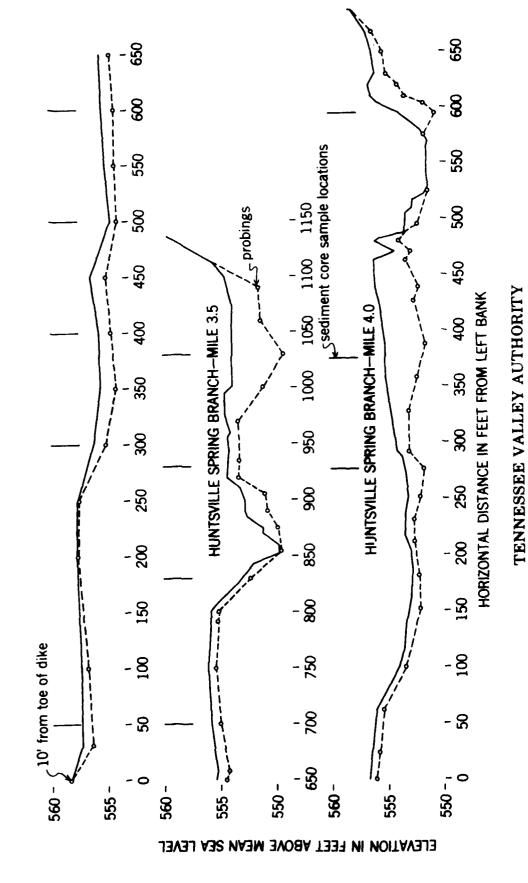


TENNESSEE VALLEY AUTHORITY OF DDT STUDY IN VICINITY OF



## DATA SERVICES BRANCH DDT STUDY IN VICINITY OF REDSTONE ARSENAL SEDIMENT INVESTIGATIONS AUGUST 1979 Sheet 6 of 10

TENNESSEE VALLEY AUTHORITY



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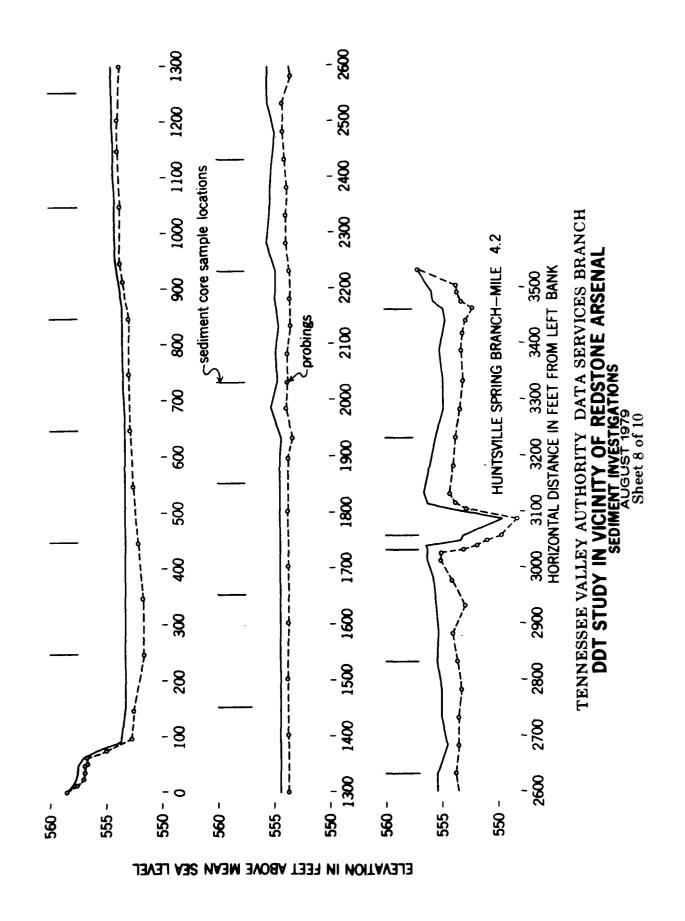
DATA SERVICES BRANCH

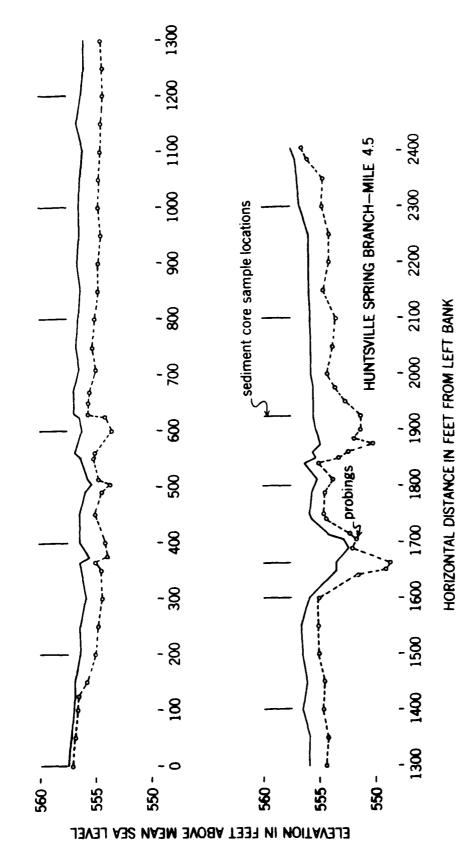
DDT STUDY IN VICINITY OF REDSTONE ARSENAL

SEDIMENT INVESTIGATIONS

AUGUST 1979

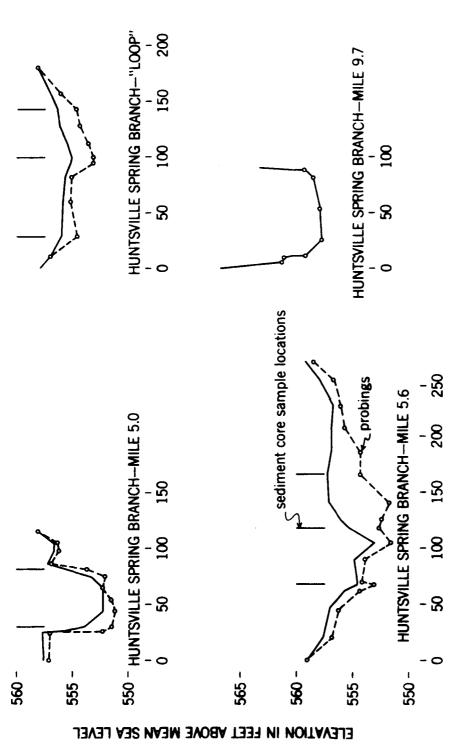
Sheet 7 of 10





TENNESSEE VALLEY AUTHORITY DATA SERVICES BRANCH

## DDT STUDY IN VICINITY OF REDSTONE ARSENAL SEDIMENT INVESTIGATIONS AUGUST 1979 Sheet 9 of 10



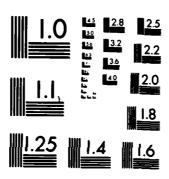
HORIZONTAL DISTANCE IN FEET FROM LEFT BANK

TENNESSEE VALLEY AUTHORITY DATA SERVICES BRANCH

## DDT STUDY IN VICINITY OF REDSTONE ARSENAL SEDIMENT INVESTIGATIONS

AUGUST 1979 Sheet 10 of 10

AD-A128 UNCLASSI	co	GINEERII NTAMINA SEARCH	NG AND ENVI TION OF HUI INC GAINES -C-0224	RONMENI VISVILLE VILLE FL	TAL STUI SP.,(I	DY OF DO J) WATER SULLIVAN	DT R AND A N ET AL	IR . NOV 8	4/ <b>{</b> 0 NL	3	_
UNCLASSI	FIED DA	C#01-79	0-0224				F76	13/3	NL	نصا	
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			_								



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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#### METHOD AND PROCEDURE FOR OBTAINING CROSS-SECTION DATA FOR REDSTONE ARSENAL DDT STUDY

To obtain cross-section data, a transit was used for alignment and leveling in conjunction with a boat containing a sonar recorder and a wire distance wheel. The transit was set up on one bank and alignment made to the other bank. Levels and probings of the overbank were taken using a level rod, probing rod, and a 100-foot tape, if necessary. The end of the wire from the wire distance wheel on the boat was secured to the "O" or to some determined distance near the water edge. Soundings were then taken by the sonar recorder as the boat crossed to the other bank. Interval distances of 25 feet were automatically recorded on the sonar chart by "fix" lines as the wire unwound from the wire wheel. Alignment of the boat was maintained by radio communication from the transitman to the boat operator. When the boat landed at the other bank, a distance was measured from the wire distance wheel to some point on the bank. Levels and probings were then taken of that overbank. The sonar chart was then reviewed for probable probing locations. After securing the wire again to the same initial point, the boat proceeded as before to the first probing location. Anchors, fore and aft, would be set, distance and alignment checked, then a probing would be made. The boat would then move to the next location and anchor as before. From the information obtained from the probings as the boat moved from one location to the next, the previously selected probing locations were revised, added to, or deleted, if deemed necessary. Where the boat and sonar could not be used due to shallow water or brush, the section was taken by wading and using the same procedure in taking the overbank section.

- The water with a

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Water surface elevation was used for reference elevation for all sections from mile 0.0 Indian Creek to mile 4.5 Huntsville Spring Branch. The water surface elevation for the day and time each section was taken was obtained from the water level charts from gages installed at mile 0.0 and 4.7 on Indian Creek and mile 2.7 on Huntsville Spring Branch. Thirdorder levels were run from the gage at mile 5.9 on Patten Road Bridge to temporary bench marks (TBM's) at miles 5.0, 5.6, and the "loop" section on Huntsville Spring Branch. Elevation for section at mile 9.7 on Huntsville Spring Branch was obtained from the water level gage at mile 9.7 at the time the section was taken. All gages were tied by third order levels to second- or third-order bench marks. Data for the cross sections were recorded in Data Services Branch's field book No. 1726, page 2 through page 24, and on the sonar charts. Data for levels to gages were recorded in Data Services Branch's field book No. 3238, page 19 through page 30 and field book No. 3241, page 1 through page 18. Elevations were tied to the following bench marks: A9-4H; BM-44 (reset); BM-47; BM-H-1-R; B-314; CY-150; T5SR1-W; USEG-47; and WSR-57-R.

APPENDIX C

TASK 4

RAW DATA TABULATIONS

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHELER RESERVOIR, ALABAHA

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Mary Control

TASK4	SV - 4	SESSMENTS	OF DOT CON	CONCENTRATIONS	ONS AND O	OTHER	AND OTHER CONTAMINANTS IN		SEDIMENTS IN REDSTONE ARSENAL VICINITY	IN REDS1	ONE ARSE	MAL VICIN	IITV
STREAM	#11.E	HORIZON TAL LOCAT TON	CORE FRAC 71 OV (INCHES)	DATE	L A6 TO	CONC ENT DDT-0,9 ( UG /G)	CONCENTRATIONS OF DOT- DOT-0,P DOT-P,P DOD-0, (UG.G.) (UG.G.) (UG.G.	Īa-	NSURED IN 200-P.P D (UG/G)	DDE-0,P DDE-P,P (UG/G)	17-U6/6 106-P.P (U6/6)	MINIMUM (UG/G)	MAXIMUM 1 UG/6)
BARKEN FORK CREEK	1.2		9-0	15AUG79		•	•	•	•	•	•	•	•
A S		<b>~</b> .	6-12	15 AUG79		•	•	•	•	•	•	•	•
ARREN FORK	-	<b>-</b>	12-24 >24	15AU6 /9		• •	• (	• (	• (	• (	• •	• (	• (
FOR A	• ~		COMP	15AUG79	4-027	• •		2 0.09		0.17	0.33	0-79	0-81
-VILLE SPRI		. ~	f	30AUG79	4-140	169	00 250,00	17	61.50	600,00	730.00	1981.50	1981.50
-VILLE SPRI	•	10	9-0	23AUG79	860-4	0	•		·	0.01		0.09	0.17
LLE SPRING	6	10	1	23AUG79	660-4	ð. V	0.02 0.08<	8< 0.02<		0.01	0.02	0.10	0-17
-VILLE SPRING	<b>u</b> . ,	10	9	23AUG79	<b>4-1</b> 00	ò			0.04	9	0.05	0.25	0.25
COSTAC		<b>.</b>	71	2340670	67	• ċ	700.0		2000	6.01		•	0.17
-VILLE SPRI	_		9 6	23AUG79	4-102	,	0.08	0.02		_		0.50	0.00
ILLE SPRING		01	1	23AUG79	4-103	· ·	.02 0.04<			0	0.01	0.05	0.12
LLE SPRING	ч.	01	6-12			•					•	•	•
ILLE SPRING	4	10	Į		4-104	<b>.</b>	0.02	% 0°05		0.01	0.0	0.14	0.19
-VILLE SPRING		100	9 1		4-105	ප් ර				~ c	600	0-19	0-10
MANITE CONTACTOR		5 6	9	2 AUG 19	901-4	3 6				2000	8 6	100	0.22
LLE SPRING 9		10	2	2340679	4-108	d	0.05 0.12	2 0.08	0.0	0.0	0.0	94.0	0
LLE SPRING S		010	9	23AUG79		•				•	•	•	•
9	_		6-12	23AUG79		٠	•	•	•	•	•	•	•
LLE SPRING 9	, ب	10	12-24	23AUG 79		•	•	•	•	•	•	•	•
?		20	4	23AUG79		•	•	•	•	•	•	•	•
LLE SPRIME D	- د	200	12-24	2341679		•	•	•	•	• •	• (	• 1	• (
LLE SPRING		, E	9-0	2341670		• •	• (	• •	•	• •	•	• •	• •
-VILLE SPRING		60	4-12	23A UG 79		•	•	•	•	•	•	•	•
LLE SPRING	_	03	12-24	23AUG79		•				•	•	•	•
LLE SPRING	ل.	COMP	ş		4-109	ð				900	8	0.51	0.51
SPRING	rcs.	COMP	6-12		4-110	3	0.05 0.21	1 0.05	•	600	*	0.76	2
THE SPRING	יי פיני	A .	12-24	23AU679	4-111	ಕ				600	80.0	1.30	06-1
THE SPRING		3 6	) - <del> </del>	1641679		• •	• •	• •	• •	• •	• •	• •	• •
SPRING	0	05	٩	16AUG79		•	•	•	•	•	•	•	•
LLE SPRING	0.0	02	6-12	16AUG79		•				•	•	•	•
SPRING	0	05	12-24	16AUG79	4-034	ð (	0.11 2.35	5 0.51	1-1	4.0	6.43	\$	A.05
		į		100001	769-4	<b>.</b>			76			24-0	
11 S 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<u> </u>	i	TANGET 1	4-141	3 J	•		4	11.40	2 2	161-75	161.75
2 1 3 3 T	• ~	10	<b>6-12</b>	16AUG 73	4-142	18	,	•		2.70	7.11	2.2	3.2
LLE SPRING	_	010	12-24	16AUG79	4-143	6	31 0.95	1.31	2.85	1.53	1.98	8.93	1.93
SPRING	_	02	9-0	16AUG 79		•				•	•	•	•
LLE SPRING	_	70	6-12	16AU679		•	•	•	•	•	•	•	•
H-VILLE SPRING OR	-	200	12-24	16AUG79		•				. 6	2.45	24.70	
	-	n (c	<u> </u>	1 SAUG79	797-4	: 6	0-05 2.4	2 0-37	1.39	613	0.39	R	F
בנ	0	03	12-24	16 AUG 79	4-183	<b>}</b> &	03 1.61		• 0	3	0.22	3.20	3.20
LLE SPRING B	_	03	<b>*</b> 2 <b>*</b>	16AUG 79	1041	ئ د	0.02 0.5		0	0.12	0.11	2	1.90 0.10
-VILLE SP	0.0	03	>2¢	16 AUG79	37-1	• •		0.10		3	600	11-0	5.0
2 2 2 3	2		g	16AUG 79	4 4 38	•				7 9:/	04-07	121074	K-161

ENGINEERING AND ENVIRONMENTAL STUDY OF DDI CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABANA

TASKA - ASSESSMENTS OF DOT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSEMAL VICINITY

										i		9		8
STREAM	MILE	HOR 12 ONTAL	FRACTION (INCHES)	DATE	LA810	585	07-0,P 0(C)	CONCENTRATIONS OF DD1 TO DD1-0,P DD1-P,P DDD-0,P CUG/G) (UG/G) (UG/G)		P DOD-P, P DO 1 106/6) (	00E-0,P 00E-P, (UG /G) (UG /G)	00 E-P. 9	MINIMUM (UG/G)	MAXIMUM (UG/G)
SPRTMS	,	a	2	16.416.79	95 0-4		84.0	34.40	30.30	3	10.30	9.75	99.83	99.83
4-VILLE SPRING BR	0	•	12-24	16AUG79	9		0.02	0.83	9	1-10	990	0.57	3.64	3.64
SP RI NG	1.7		9	16 AUG79	4-14	v	20%	0.03	0.45	0.30	0.11	1.16	2002	2 <b>50</b>
SPRING	1.7		6-12	16AUG79	4-145	<b>~</b>	100	0.02	0.03	0.02	0.02	0.0	0.11	0.12
SPRING	1.7	_	9-6	16AUG79			•	•	•	•	•	•	•	•
2 1 10	1.7	20	۲۱۶	16AUG 79			•	•	•	•	•	•	•	•
SPRING	<b>!</b> .		9-0	1 64 0679			•	•	•	•	•	•	•	•
4-VILLE SPRING BR			21-9	16 A UG 79			•	•	•	•	•	• (	• (	• (
SPRING	1.7	3 2	6-12	1640679				• •		• •		• •	• •	
SPRING	1.7	2,3,4	9-0	16AUG79	9-1-9		0.0	0.52	1.81	1.37	0.52	1.89	6-17	6.17
SPRING	1.7	2,3,4	9-15	16AUG79	4-147	~	0.08	0.15	0.65	0.53	0, 18	0.63	2-14	2.22
1-VILLE SPRING BR	1.7	50	9	17AUG79			•	•	•	•	•	•	•	•
SPRING	1.7	0.2	6-12	17AUG79			•	•	•	•	•	•	•	•
4-VILLE SPRING BR	1:1	\$ 62	12-24	17AUG79			•	•	•	•	•	•	•	•
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	:	000	9:	1 / 406 / 9			•	•	•	•	•	•	•	•
2 X X X X X X X X X X X X X X X X X X X		9 6	71-0	1 VAUG 12			•	•	•	•	•	•	•	•
2 1 2 4 C S	•	8	*7-71	140674	0 71 ~ 7		٠, ١	•			. 4.	33.60	36.185	261.25
TE SPRING	,		7	13416.79	1071	,		190	32.00	20.021	2007	07.422 EE	10.67	20.00
S PR 1 NG	1.7		12-24	17 A1679	150	,	200	10.24	0.07	0.16	603	0.07	09.0	
SP RI NG	7			17AUG79	4-151		1.75	115.00	13.00	47.50	7.50	15.00	199.75	199.75
+VILLE SPRING BR	1.7		6-12	17AUG79	4-152		0.02	0.33	8	0.16	0.03	9000	0.64	9900
SPRING	1.7		12-24	17 AUG79	4-153		0.02	0.16	0.05	0.10	Q. 02	0.05	0.39	0 • 39
1-VILLE SPRING BR	1.7	-	9-0	17AUG79	4-154		0° 13	<b>6.</b> 00	0.89	2.00	*	1.07	10.43	10.43
SPR ING	1.7		21-9	17 AUG79	4-155		0	2.75	0.21	0.50	3		3.99	3.99
SP ING	1.7		12-24	17AUG 79	21-12	<b>.</b>	600	0.10	0.05	0.05	0°0	0.0	0.15	0.35
SPRING	- 1	90	*2.4 *2.4	17AUG79		٠,	200	0.144	0°05	>01°0	000	0.01	0.25	Q
	, ,	200	*70	1780679	161-4	,	600	>06.0	000	> 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0	88	54.0	20.
CDETAC			9 7	17415.70	100		1 6	22.50	20011	86.	0 0	3 4	112-14	*1°C11
SPRIMG	1.7	4	12-24	17AUG79	940-4	v	0.00	07.1	0.0	0.07	0 0	0	0.27	200
28 AZ NG	2.0	010	9-0	17AUG79	?			•	•	•		•		
•	2.0	01	6-12	17AUG79	640-4		0.19	6.50	2.00	÷	1.45	3.75	21.14	21.14
SPRING	2.0		9	17 AUG79	;		•	•	•	•	•	•	• ;	•
<b>1</b> 0 0	2.0		9-9	17AU679	940-4		9,	13.70	2.74	90.5	1.22	2.69	25.81	25-81
CONTRACTOR	0		21.4	2040579	4-150		6 6	0000	0.34	123.60		22000	ŗ	66 - 224
9 00	3.0	10	12-24	20 AUG79	4-160	V	0.02	71.0	0.04	0-14	0.02		14.0	0.43
SPRING	3.0	010	>24	20 AUG79	4-063	· ~	0.02	0.57		0.45	0	0.08	1.25	1.27
SPRING B	3.0	01	>24	20 AUG7 9	4-161		0.0	0.19	0.05	0.12	0.03	0.08	0.48	84.0
	3.0	05	9-0	20 AUG 79			•	•	•	•	•	•	•	•
LLE SPRING B	9	70	6-12	20 A UG 79	•		•	•		•	•	•	•	•
	300		: د د	20 AUG79	791-4	,	06.42	472.00	01.0	290.00	43.80	113.00	1018.40	04.8101
	9		6-12	20AUG79	4-163	V 1	4.02	30.20	5.78	23.40	7	7.29	1.	75.46
STATE OF STA	2 6		57.7	2040679	401-4	~	5	4.15	2 2 2	2-18	0.35		160,075	
4-VILLE SPRING BR			6-12	20AUG79	190		0.26	10-40	3.17	102.01	1.39	1.98	25.71	25.71
SPRING B	3.0		12-24	20 AUG79	4-062		0.0	1.53	0.32	8	0,13	0.24	3.25	3.25
4-VILLE SPRING BR	3 • 5	10	٩	17AUG79	4-165		0.13	7.13	2.	2.80	0.65	1.15	13.06	13.06

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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

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		TASK4	۷	SSESSMENTS	OF DOT CONCENTRATIONS AND OTHER CONTAMINANTS IN	CENTRATI	ONS AND	5	HER CO	TAMINANI		OINENTS :	IN REDST	INE ARSE	SEDIMENTS IN REDSTONE ASSENAL VICINITY	<b>F</b>
	STREAM		HILE	HORIZUNTAL LOCATION	CORE FRACTION (INCHES)	DATE	L AB10	200	CONC ENT RAI 001-0.P OC (UG /G) (	CONCENTRATIONS OF DOT-0,P 30 (UG/G) (	00-0, P 0	SURED IN 00-P, P DO (UG/G) (	SEDIMENT-UG/G DE-0,P DOE-P,P (UG/G) (UG/G)	17-U6/6 0E-P, P (U6/6)	minimum (UE/G)	MAX INUM (UG/G)
	M-VILLE	SPRING	3.5	20	9-0	17AUG79	4-166	V	0.14	10-1	1.32	0.98	0.42	1.57	5.30	5.44
	#-V11.E	SPRING BR	8° 6	05	~ }	17AUG79	4-167	<b>v</b>	0°0	0.02<	0.01		8	0.03	0.03	80.0
	H-VILLE	SPRING	3.5	03	6-12	17AUG 79			•	• •	• •	•	•	• •	•	•
	H-VILLE	SPR ING	3.5	*	Į.	E TAUGT9			•	•	•	•	•	•	•	•
	M-VILLE M-VILLE	SPRING		100	6-12	1740679	971-7	,		•	. 63		1.27		14.22	16.12
	H-VILLE	SPRING		3.4	6-12 6-12	17AUG79	4-169	<i>,</i>	× 100	0-02	0.03	0.02	0-02	000	0.16	0.19
	H-VILLE	SPRING	3.5	50	9	17AUG 79			•		•	•	•	•	•	•
	H-VILLE	SPRING	3.5	02	6-12	17AUG79			•	•	•	•	•	•	•	•
_	H-VILLE	SPRING		90	9	17AU679			•	•	•	•	•	•	•	•
	H-VILLE	SPRING		9.	71.0	17AUG79	4-170	~	0.13	1.68	3.28	1.45	0.85	3.13	10,39	10.52
	H-VILLE	SPRING	3.5	9.6	9-15	17AUG79	4-171	~	0.41	0.91	2.94	1.74	1.24	4.26	11.09	11.50
	H-VILLE	SERVE	3.5	07	۴	17AUG79			•	•	•	•	•	•	•	•
	#-VILLE	SPRING	W (	80	9-0	17AU679			•	•	•	•	•	•	•	•
	4-VICE		W 4		4-12	27AU679	4		. ?	• .	•		• 6			F. 82
		SPRING	9	8.	7770	17AUG79	4-172		200	78.80	56.30	08-89	17.30	36.80	267.00	267.00
	H-VILLE	3 2 3	3.5	7.0	6-12	17AUG79	4-173		5.23	81.30	40	92.50	17.80	48.60	285.83	285-83
_	H-VILLE	SPRING	3.5	7.8	12-24	17AUG79	4-114		0.28	3.10	0.30	>69-0	0.20	0.52	5.09	5.29
	H-VILLE	SPRING	3.5	60	9	17 AUG 79			•	•	•	•	•	•	•	•
	37117E	SPRING		60	6-12	17AU679			•	•	•	•	•	•	•	•
	#-VILLE				1	17AUG79	4-053		4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	85.00	27.30	000	86	2	160-00	12000
	#-Y 7.L.E	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1	56	1 4	20 AUG 79	1-1 X		9	4	4.4	0-16	213	0.33	1.57	1.57
_	H-VILLE	SPRING	0	010	6-12	20AUG79	4-176	v	0.53	6.38	2.58	5.86	1.05	2.80	18.69	19.22
	H-VILLE	SPRING	0.4	20	90	20 AUG 79	4-177			875.00	363.00	775.00	131.00	365.00	2529.00	2581.50
_	H-VILLE	SPIRC	0	20	6-12	20AUG79	4-178			1113.00	468.00	838.00	111-00	325.00	2945.00	2945 .00
	N-VILLE		0 0	20	12-24	20AUG 79	6-11-5		96	132,00	76.00	96	000	32.00	351.40	191166
	***	SPRING		200	>2¢	20 AUG 79	4-180		0.13		0.48	0.85	0-13	90.0	68-4	
_	H-VILLE	SPRING	0	03	9-0	20AU679	4-185		0.32	4.78	99.0	0.78	0.34	0.98	7.86	7.86
	H-VILLE	SPRING	4.0	03	21-9	20AUG79	4-186	~	0.03	0.27	90.0	0.15	0.11	0.05	0.63	9.0
	H-V111E	SPRING	0	03	12-24	20AUG79	4-187		40.0	0.03	8000	0.02	0.02	0.07	0.24	0.28
		STATE OF THE STATE				204.06.79			7.600	20.00	00.161	80.022	01076		07070	01000
	H-VILE	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	•	d HOU	12-24	20AUG 79	4-058		10.60	167.00	60.10	88.80	60.6	21.70	357.29	357.29
_	H-VILLE	SPRING	4.2	10	9-0	22AUG 79			•	•	•	•	•	•	•	•
	H-VILLE	STIRE	4.2	10	6-12	22AU679			•	•	•	•	•	•	•	•
	H-VILLE	SPRING	4:5	10	12-24	22AU679			•	•	•	•	•	•	•	•
	#-V11.E		704	20	9;	22AUG79			•	•	•	•	•	•	•	•
	M-V1116	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 - 7	200	12-12	22 815 70			•	•	•	•	• •	• •	• (	• (
-	H-VILLE	SPRING	4-2	03	,	22 AUG 79				. •	. (	•	• •	• •	•	. •
	#-V11.LE	SPRIME	4.2	63	21.5	22AUG 79			•	•	•	•	•	•	•	•
	H-VILLE	SPE INC	4.2	8	9-0	22AUG79			•	•	. •	•	•	•	•	•
	H-VILLE	SPAZ MG	4.2	*0	6-12	22 AUG 79			•	•	•	•	•	•	•	•
	#-VILLE	SPRING	4.2	0 <b>c</b>	, i	22AU679			• .	•	•	•	• •	•	• ,	• •
				•	:				•	•	•	•	•	•	,	•

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ENGINERLYG AND EVVIR MARVIAL STUDY OF DOT CONTAMINATION MONTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK4 - ASSESSMENTS OF DOT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

TREAM		Ī	11 E L	-0812 ONTAL	FRACTION	DATE	L AB 10	001-3,P 001-P, (UG/G) (UG/G)	۰ -	900-0,P	000-4-000	006-04 006-P4P	( 9/9/)	HININGH (OC/G)	MAX 1PUP (UG/G)
-אורנ	SPRING	ď	~	49	ţ	22AUG79		•	•	•	•	•	•	•	•
-VILLE	SPRING	BR 4.	7	07	9-0	22AUG79		•	•	•	•	•	•	•	•
-VILLE	SPRING	A	~	•	70	22 AUG 79		•	•	•	•	•	•	•	•
-VILLE	SPAT NG	A	~	•	4-0	22 A UG 79		•	•	•	•	•	•	•	•
-VILLE	SPRING	A 4.	~	0	٩	22AUG79		•	•	•	•	•	•	•	•
-VILLE	SPRING	**	~	0	6-12	22AUG 79		•	•	•	•	•	•	•	•
-VILLE	SPRING	*	~		ş	22AUC79		•	•	•	•	•	•	•	•
-VI LLE	SPRING	•	~		6-12	22 AUC 79		•	•	•	•	•	•	•	•
-VI LLE	SP RI MG	•	7	2	9-6	2240679	4-514	0.10	1.11	2.10	2.49	86.0	2.59	9.37	9.37
-VILLE	SPRING	4	~	~	6-12	22AUG79	4-215	0.0		0.0	0.05	0.03	0.09	0.24	0.24
-VILLE	SE E	,	~	۰,۳,	90	22 AUG 79	4-216	0,38	5.15	8.00	10.80	2.50	6.25	33.08	33 .08
_	SPRING	9 R 4.	~	m	6-12	22AUG79	4-217	\$0°0 ×	0.44	0.92	1.04	0.56	1:1	4.40	***
4-V1 LLE	SPRING	•	2	•	9-0	22AUG79		•	•	•	•	•	•	•	•
	SPRING	•	~	•	21-9	22AUG79		•	•	•	•	•	•	•	•
-VILLE	SPRING	*	~		9-0	22AUG79	4-220	740.00			850.00	148,00		6913.00	8913.00
I-VILLE	SPRING	4	r4	•	6-12	22AUG79	4-221	2300,00	12700	_	~	150.00		18100	18100
-VILLE	SPRING	4	~	•	12-24		4-218	21.40				22.0		88.21	68.21
-V I LLE	SPRING	*	۲.	•	>24	22AUG79	4-219	1550,00	9	369,00	~	44.50	22	11869.5	11869.5
-VILLE	SPRING	4	~	7	9-6	22AUG79	4-222	4.76	***	12.20		4.08		85.54	85.54
-VILLE	SPRING	;	٠,	~	6-12		4-223	1.56		22,60		7.02	20.80	85.28	85.28
w	SPRING	•	~	_	12-24		4-224	4.20	11.80	1.09		0.30	1.08	19.76	19.76
u	SPRING	•	7	€0	40		4-225	0.10	7.50	0.73	8	0.25	0.98	11.19	11.19
w	SPR ING	•	~	•	6-12		4-226	0.09	0.17	<b>•1•</b> 0	0.09	900	0.19	0.74	0.74
w	SPRING	4	~	60	12-24		4-227	0.11	0.34	0.05	0.07	0.01	ð	0.62	0 -62
	SPRING	4	~	€	<b>*2</b> <	22AUG79	1	•	•	•	•	•		•	•
4	SPRING	•	N		9	22 AUG79	4-075	66.80		54.50		10.10			1035-30
w	SPRING	4	~	a a	6-12	22AUG79	4-0-4	157.00	-	82.00		13.90			1485.90
w	SPRING	•	~	OHD	12-24	22AUG79	4-071	332.00	2	74.50	•	10.80	•	2165.30	2165.3
-VILLE	SPRI 46	;	~	ŧ.	<b>&gt;</b> 54	22AUG79	4-018	7.45	35.70	1.60	1.80	0-23	1.20	47.98	47.98
-VILLE	SPRING	i	~	-	9	22AUG79		•	•	•	•	•	•	•	•
-VILLE	SPRING	4	~	~	9-0	22AUG 79		•	•	•	•	•	•	•	•
	SPRING	i	~	<b>m</b>	9	22AUG79	,	•	•	•	•	•	•	•	•
w	SPAING	•	~	0 T O	4	22AUG79	<b>4-08</b> 5	0.0	0.82	09.0	16.0	0.62	*	4.59	4.50
	SPRING	•	~ ·	4	ţ	22AUG 79		•	•	•	•	•	•	•	•
u 1	SPRING	•	~ 1	•	9	22 AUG 79		•	•	•	•	•	•	•	•
<u>.</u>	SP RE	÷	~	۰	9	22AU679	,	•	•	•	•	•	•	•	•
۳.	SPRING	4	~	<u>a</u>	•	22AUG79	4-083	0.05	0.59	0.69	1.06	0.34	0.86	3.59	3.59
w :	SPAING	÷	~	_	ę,	22AU679		•	•	•	•	•	•	•	•
۳ <u>۱</u>	SPRING	•	~ '	80	9-0	22AUG79		•	•	•	•	•	•	•	•
ָי יַרָּ	SPRING	•	٧,		P	22 AUG 79		• ;	• ;	• ;	• ;	• .	• ,	• ;	•
┪・	SPK 1 NG	•	41	į	ę,	22AU679	1001	0,02	0.14	0.38	0.55	81.0	0.41	1.68	1.68
. ب	-	•	· ·	<b>.</b>	9	22AU679		•	•	•	•	•	•	•	•
1	_	* * *	٠. د د	- ·		220.0679		•	•	•	•	•	•	•	•
1011	2007	•	• •	9 10 10	ę į	2241630	980	• .	• ,	• ,	• .	• 6	• ?	• 6	• 6
1112	-	• 4	, r	L E	ρ <u>1</u>	224.6.70	9	91.	1069	K • 3	2.	0.00	7.40	3.40	,
71.1	COUNTY	1	, ,	٠.4	3 4	200422		•	•	•	•	•	•	•	•
1117	• •	4		٠.0	9 6	224(679		. (	• •	• (	• (	• •	• (	• •	• (
	SPRING		۰ ،	a W	9	22411679	4 -086	20,00	2500,00	221,00	30.5.00	45.00	140,00	3529.00	3524-00
-V1116	SPRIMG	B. A.	2 1	1	د ا	22 AUG 79		•		•	•	•			•

ENGINEERING AND ENVIRONMENTED STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

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TASK4 -		ASSESSMENTS (	OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN	CENTRATI	ONS AND	OTHER	CONTAMINA	NTS IN SE	DIMENTS	IN REDST	ONE ARSE	SEDIMENTS IN REDSTONE ARSENAL VICINITY	117
STREAM	41 LE	HOR 1 2 UN TAL LOCAT 1DN	CORE FRACTION (1) NCHES)	DATE	LABID	CONCENTRATIONS DDT-0,P DDT-P, (UG/G) (UG/G	DOT-P.P	00-0, P 0-0, P 06/6.1	MEASURED IN P DDD-P,P US	SEDIME DE-0,P IUG/G)	NT-UG/6 DDE-P.P ( UG/6)	10TAL MINIMUM (UG/G)	MAXIMUM (UG/C)
-VILLE SPRING BR 4	6.2		9	22 A UG 79		•	•	•	•	•	•	•	•
LLE SPRING 6A 4	7.	0 COM	0-0	224 46 70	-C87-	1.1	17.40	7. 85	3.	<b>3</b> ,	8.	45.05	45.05
-VILLE SPRING BR 4	,		12	2241578		• •	• •	• •	•	•		•	•
-VILLE SPKING BR 4	7		6-12	22AUG79		•	•	•	•	•	•	•	•
LLE SPRING BR 4			6-12	22AUG79	4-088	0.0	2 0.09	0.15	0.25	0.19	0.38	1.06	1.08
LLE SPRING BR 4	7.4		6-12	22AUG79		•	•	•	•	•	•	•	•
-VILLE SPRING BR 4	7	•	6-12	22AUG79	9	•	_		. 6	• 6	. 8	• 6	
LLE SPRING BR 4	7 .		2-17 0-17	22 A LE 79		70°0 •	co.,	§ ,	5			6760	16.0
LE SPRING BR 4	7		6-12	22 AUG 7 9		• •	• •	• •	• •	• •	• •	• •	•
SPRING BR 4	~		6-12	22AU679		•	•	•	•	•	•	•	•
LLE SPRING BR 4	7.4		9-15	22AUG79	89	70°0 >	2 0.04	0.07	0.08	0.03	0.05	0.27	0.29
LLE SPRING BR 4	~ '	-	71-9	22 AUG 79		•	•	•	•	•	•	•	• 1
LLE SPRING BR 4	7		7-15	22 ALIG79		• •	• •	• •	• •	• •	• •	• •	• •
SPRING BR 4	7		6-12	22 AUG79	160-4	730.00	00.0000	365.00	460.00	00-09	255.00	6290.00	6290.00
LLE SPRING BR 4	1.2		9-15	22AUG79		•		•	•	•	•	•	•
LLE SPRING BA 4	. 2		6-12	22 AUG 79		•		•	•	•	•	•	•
SPRING BR 4	~		6-12	22AUG 79	<b>4-04</b> 2	<b>4-10</b>	0 21.60	13.10	14.40	2.75	6.50	65.45	62.45
SPRING BR 4	7		12-24	22AUG79		•	•	•	•	•	•	•	•
SPRING BR	,		12-24	22 ALE 79	1003	0.28	1.63	. 13	0.18	0.05	0-13	2-40	2.40
SPRING BR 4	7		12-24	22 AUG 79	30	1230.00	565	52	00-094	54.00	245.00	8159.00	6159.00
SPRING BR 4	7.5		12-21	22AUG 79		•	•	•	•	•	•	•	•
SPRING BR	7		12-24	22AUG79		• 5		•	• 3	• ;	•	•	•
SPRING BR A	7	-	12-24	22AU679	200	1.57			5	0-13	, e	13041	13.41
SPRING BR	7		76	22AUG79		200	36.40	200	0.00	0.00	200	96.00	0.37
SPRING BR 4		_	. 9	21AUG79	4-188	000			0.11		0.36	0.81	0.81
SPRING BR 4	5		9	21AUG 79	4-189	8			E	0.32	1.60	4-41	14.4
SPRING BR 4	5		6-12	2140679	4-190	10.0 >			\$ i	8	9.28	70	74.0
SPECIAL BR	<b>S</b>	_	9	2 1AUG 79	4-191	250	2000	0.62	* C	•	200	4.63	2.5
	, "		12-24	21 AUG79	1-193	0.00			0.0	0.05	0.0	0.52	0.52
SPRING BR 4			9-0	21AUG79		•	•	•	•	•	•	•	•
SPRING BR	•	_	5-12	21AUG79		•	•	•	•	•	•	•	•
SPRING BR A	•		12-21	2140679		•	•	•	•	•	•	• 1	•
SPRING BR 4			P-12	2140679		• •	• •	• •	• •		٠.	• •	• •
SPRING BR 4			12-24	21AU679		•	•	•	•	•	•	•	•
SPRING BR 4	t.5	_	9	2 1AUG 79		•	•	•	•	•	•	•	•
SPRING BR	•		-12	21AU679		•	•	•	•	•	•	•	•
H-VILLE SPRING OR 4	, ,	_	• Z-Z1 0-6	71 AUG 79	4-104	۶.	4. 4. 4.	3.61	6.21	2.01	5.03	21.56	21,56
SPRING BR			6-12	21AU679	4-195	800	0		1.38	0.83	1-50	5.55	5.55
SPRING BR 4	5	•	12-24	21AUG79	961-4	< 0.02	<b>v</b>		0.05	0.05	8.	0.27	0.33
SPRING BR	5		1	21 AUG79		•	•	•	•	•	•	•	•
SPRING BR	•		6-12	21AUG79		•	•	•	•	•	•	•	•
NE SELECTION OF THE PROPERTY O		5	<b>57-</b> 21	21 A US 17		•	•	•	•	•	•	•	•

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ENGINEERING AND EVELN OVENTAL STUDY JF DOT LONIARINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHELER RESERVOIR, ALABAMA

TREAM		M: LE	HOR 12 ON TAIL	CORE FRACTION (INCHES)	UATE	L AB 10	CONCENTRA DDT-0,P C (UG/G)	17 IONS 0 101-P.P	00-0.P	ASURED IN DO D-P.P ( (UG/G)	DDE-0,P DDE-P,P (UG/G) (UG/G)	NT-UG/G DOE-P,P (UG/G)	MINIMUM (UG/G)	MAXIMUM (UG/G)
-VILLE S	SPRING BR		90	į	2140679		•	•	•	•	•	•	•	•
		;	80	6-12	21 AUG79		•	•	•	•	•	•	•	•
	SPEED OF	;	<b>30</b> 6	12-21	21AUG 79		• .	• ;	.;	• :		•	• 6	. 07
		*	D 6	<b>p</b> <sup>5</sup>	2140619	. AT-	****	00.0	1.033	26.		4	11.65	
	SPRING	•		71-0	Z TAUCTY	961-	2.0	000	2.5	2 5	1.0		00.0	
			91,0	*2-71	21AUC/9		7000	10.0	\$ 600 ×	20.00	2.00			1100
		•	•	<b>f</b>	2 1AUG 79	4-200	105.00	860.00	46.20	39.90			06.4011	200
		•	2 :	<b>P</b>	2140679	4-201	000008	00000000	1000,00	00.002.2		•		00000
 		÷	01	9-12	2 1AUG 79	4-202	4000-00	23000	380.00	_	320.00	120		00667
	_	÷	10	12-24	21AUG79	4-203	2.00	35.00	13.00		2.00			80.00
'n		;	7 7	P	21AUG79	4-204	1.50	32.00	62.50	125	20.50	m	21	274.00
	SPRING 8			215	214 UG 79	4-205	1.38	1.55	1.35	1.0	200	2.90	7.08	880/
			11	12-24	21AUG79	4-204	0.12	98.0	0.84	0.66	0.28	0.24	3.00	3.00
			12	90	21AUG 79		٠	•	•	•	•	•	•	•
		4	12	9-15	2140679		•	•	•	•	•	•	•	•
			12	77-71	21 AUG79		•	•	•	•	•	•	•	•
		4	12	>2*	2140679	4-071	80%	0.54	0.39	76.0	0.19	0.35	2°\$	2.44
	SPRING B	6R 4.5	75	+24	21 AUG79	4-210	0.29	1.82	%	3.64	0.82	1.56	6906	6
			<b>1</b> 3	0-0	21AUG79		•	•	•	•	•	•	•	•
			13	6-12	21AUG79		•	•	•	•	•	•	•	•
			13	12-24	21 AUG79		•	•	•	•	•	•	•	•
			2,1	9-0	21AU679	4-207	U. 22	1.77	1.25		2.65	5.55	14.38	14.38
			12,13	9-15	21AUG79	4-208	1.10	5.55	1.00		1.78		14.59	14.59
	SPRING B	8R 4.5	12,13	12-24	21 AUG79	4-209	1.06	16.00	19.20	•	9.20	~	115,46	115.46
-VILLE S			41	9	2140679	4-211	× 0°07	0.38	0.37	0.54	0.22	0.79	2.30	2.37
			4	6-12	21AU679	4-212	0.07	0.35	0.05		0.03	0.11	0.71	0.7
			41	\$2 <b>-</b> 21	21AUG 79	617-4	20.0	0.17	20.02	•	1000	20.0		56.0
יייייייייייייייייייייייייייייייייייייי				د	21AU6/9	200	07 %	1301.00	2.67	-		00.40		01 - 2901
	SPERIE BE			21-9	21AUG79	400	00007	2	24.00		•	•	3	
			L .	47-71	< 1 AUG 17		01.0		0.00		2000			
			10	9-9	23AU679	877-4	00.07	3100,00	960.00	-	775.00		00.507	00.5077
		2	10	21-9	23AUG79	4-229	89.10	Ä	90.2.00	-	220.00		4	01-0-6
			10	15-24	23AUG 79	4-230	91.30	•	42 9°00		06-49	220.00		07-1412
			20	f	23AUG79	4-231	173.00	~	289.00	_	74.30		3405	3405 -30
	SPRING B		02	6-12	23AUG79	4-232	5.40		92.30	~	20-80	•	433	433.80
				17-24	23AUC 79	4-233	0.62		38.00		0.59		9	68.61
				9	23 AUG 7 9	4-112	197,00	3540	760.00	1540.00	26 Q. 00		•	6817.00
		_		6-12	23AUG79	4-113	70.50	1612.00	715.00	1551.00	137.00	m	4478.50	178.50
I-VILLE S	SPRING BR			12-24	23 AUG 79	4-114	46.70	2 48 .00	214.00	750.00	36.00	75.10	1369.80	1369.80
	SPRING B	_		f	24AUG 79		•	•	•		•		•	•
				6-12	24AUG79	4-234	19.70	97.80	10.70	18.90	3.57	16.00	166.57	166.57
				dH00	24AUG79	4-131	279.00	2050.00	106.00	112.00	62-10	271.00	2880.10	2880.10
				40	24AU679		•	•	•	•	•	•	•	•
				9-0	2440679	4-128	550.00	1513.00	65.10	% %	60.10	280.00	2558.20	2558.20
		5		6-12	24AU679		•	•	•	•	•	•	•	•
		•		12-24	24AU679		•	•	•		•			•
	Ø	•		COMP	24AUG79	4-125	1060.00	~	124.00	m	12	450.00	13023	13023
	€	Š	01	f	24AUG79	4-235	2.52	52.80	7.02	14.40	1.91	7.38	36.03	66.03
LLE	9	A 5.38		6-12	76 A 1 1 7 7 4		•	•	•	•	•	•	•	•
							•		,	•	,	•	•	•

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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

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TASK4 - ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

MAXIMUM (UG/C)	668.10	96	41-197	142.65	6.38	169.60	207.20	14.10	201 .09	174.01	180-89	263.36	124.73	•	•	•	•	•	•	•	•	•	9.0	0.45	0.28	0.92	•	•	•	•	•	•	2.0	•	.;	13.7	2.4	4.13	•	•	•	•	•	•	0.19	•	•	3.4
MINIMUM (UG/G)	668.10	2060-00	41 °1 97	139.05	5.80	169.60	207.20	144-10	201.09	174.01	180.89	263.36	124.73	•	•	•	•	•	•	•	•	•	200	0.39	0.28	0.00	•	•	•	•	•	•	0.11	•				4.13		•	•	•	•	•	40.0	•	•	Ť
7-UG/G DE-P,P (UG/G)	65.70	118.00	7.5	5.67	2.0	7.40	6.31	7.10	5.89	7.48	9.71	8.28	6.61	•	•	•	•	•	•	•	•	•	0.07	0.11	• 3	0.14	•	•	•	•	•	•	0. 02	•	•		200	9	•	•	•	•	•	•	0-02	•	•	0.0
SEDIMEN DE-0.P D (UG/G)	22.50	52.00	9	1.80	0.39	2.19	3.10	2.19	2.20	2.32	2.88	2.39	2.00	•	•	•	•	•	•	•	•	•	0.0	90.0	ş	0-11	•	•	•	•	•	•	Q. 05	•	•	2007			}	•	•	•	•	•	0.05	•	•	0.51
MEASURED IN P DOD-P.P DD 1 (UG/G) (	115.00	186.00	23.5	• 99.9	1.03	8.41	<b>8.1</b> 0	8.41	9.41	7.80	<b>6.</b> 60	9.80	7.61	•	•	•	•	•	•	•	•	•	0.10	0.07	0.03	0 24	•	•	•	•	•	•	0.05<	•	• ;	01 • 0		2 · · · · ·		•	•	•	•	•	0.02<	•	•	1.10
007 MEAS 00-0, P 00 (UG/6) (	46.40	128.00	8.55	1.80	0.52	4.20	5.29	4.40	4.49	3.61	4.40	4.19	3.81	•	•	•	•	•	•	. •	•	•	0.0	0°03	0.02	0.17	•	•	•	•	•	•	0.0	•	• ;	9.0	200	1.20	;	•	•	•	•	•	0.02	•	•	0.82
TIONS OF DT-P,P OD (UG/G) (	387.00	1400 000	00.061	117.00<	2,57<	130.00	170.00	106.00	154.00	135.00	135,00	220,00	89.70	•	•	•	•	•	•	•	•	•	0.25	0.13	0.10	0.03	•	•	•	•	•	•	0.02	•	• ;	2.20		0-22	,	•	•	•		•	0.02<	•	•	0.13
CONCENTRATIONS OF DOT MEASURED IN SEDIMENT-UG/G DOT-G,P DOT-P,P DOD-P,P DOE-G,P DOE-P,P (UG/G) (UG/G) (UG/G) (UG/G) (UG/G)			34.90	9.72	1.17	17.40	13.80	16.00	25.10	17.60	20.50	18.70	1 5.00	•	•	•	•	•	•	•	•	•	90 0	0.0	000	0.02	•	•	•	•	•	•	>20.0	•	•	500	5	5 6	}	•	•	•	, •	•	0.02<	•	•	0.03
22																										V							V												V			
					_		<	60	ي	Ģ	ų	ų.	ي										_	_	_																				_			_
LAB10		-	867-4 B	4-239		-		•		•	7	-	9 4-118C	•	•	•	•	•			•		_		9 4-136		•	•	•	•	•	_	9 4-005	•	_ '	200-4	•				•			•	9 4-014	•	•	\$ 1-010
L AB 10			24AUG 79 4-238			-					7	-	-	24 A UG 79	24AUG79	24 AUG79	2+AUG79	24AUG79	24AUG79	24AUG79	24AUG 79	24AUG79	_				1440679	14AUG79	14AU679	14AU679	14 AUG 79		•	14AUG 79		1440679 4-002	_	_		1440679	14AUC 79	144679	14 AUG 79	1441679	*	14AUG79	14AUG 79	14AUG78 1-010
CORE FRACTION (INCHES) DATE LABID	24AUG79	2+MJG79		2 4 UG 79	24AUG79	24AUG79	24AUG79	24 AUG 79	24AUG79		24AUG79	24AU679	24AU679			12-24 24AUG79	. •	6-12 24AUG79				•	24AUG79	24AUG79	4 24AUG79	14AUG79	0-e 14AUG79	_	12-24 14AUG79	-	_	54 14AUG 79	14AUG79 4		2 14AUG79	• •	24416.70	1441679	1441679	_	•	,	-	•	14AU679 4		0-12 14AUG79	1440679
CORE NIAL FRACTION IDN (INCHES) DATE LABID	>24 24AUG79	COMP 2+AUGT9	0-6 24AUG79	12-24 24AUG79	>24 UG 79	COMP 24AUG79	COMP 244U579	9-6-	6-12	12-24	90	6-12	12-24	9-0	6-12	12-24	0-6 24AUG79	6-12 24AUG79	12-24 24AUG79	0-6 14AUG79	9-0	6-12	12-24	9	71-9	12-24 14AUG 79	>24 14AUG79 4	•	6-12 14AUG79	4 6401441 0-0 4 6401441 0-0	13-34 14416-70	0-0-11 14-11C79	0-6 1441679	6-12	12-24	4-0	6-12	12-24	>24 14AUG79 4	•	<del>-12</del>	1440679						
CORE HORIZONTAL FRACTION ILE LOCATION (INCHES) DATE LABIO	01 >24 24AUG79	01 COMP 2+AJG79	01 0-6 24AUG79	01 12-24 2440679	01 >24 Z4AUG79	01 COMP 24AUG79	01 COMP 244U679	• • • • •	•6 01 6-12	•6 01 12-24	•6 02 0-6	• 02 6-12	6 02 12-24	0-0	6 03 6-12	6 03 12-24	.6 COMP 0-6 24AUG79	• 6 COMP 6-12 24AUG79	of COMP 12-24 24AUG79	.0 01 0-6 14AUG79	9-0 10 0-	0 01 6-12	0 01 12-24	0 05 0-6	0 02 6-12	.0 02 12-24 14AUG79	o 02 >24 14AUG79 4	0 03	0 03 6-12 1440679	TOURS OF THE PROPERTY OF THE P	12-24 14416-34 14416-34 14416-34	O FP G-6 14AIG79	-0 01 0-6 1444679	0 01 6-12	0 01 12-24	0 02 0-6	0 02 0-12 1	0 02 12-24	.0 02 >24 14AU679 4	•0 03 0-0	• 0 03 • 12	.0 FP 0-6 14AUG75						
CORE HORIZONIAL FRACTION LE LOCATION (INCHES) DATE LABIO	5.38 Ol >24 24AUG79	5.38 01 COMP 2+AUGT9	5.4 01 0-6 24AUG79	5.4 01 12-24 24AUG79	5.4 01 >24 244 0679	5.4 01 COMP 24AU679	5.4 01 COMP 24AUG79	5.6 01 0-6	5.6 01 6-12	5.6 01 12-24	5.6 02 0-6	5.6 02 6-12	5.6 02 12-24	5.6 03 0-6	5.6 03 6-12	5.6 03 12-24	5.6 COMP 0-6 24AUG79	5.6 COMP 6-12 24AUG79	5.6 COMP 12-24 24AUG79	.0 01 0-6 14AUG79	9-0 10 0-	0 01 6-12	0 01 12-24	0 05 0-6	0 02 6-12	.0 02 12-24 14AUG79	o 02 >24 14AUG79 4	0 03	0 03 6-12 1440679	4 6401441 0-0 4 6401441 0-0	12-24 14416-34 14416-34 14416-34	O FP G-6 14AIG79	-0 01 0-6 1444679	0 01 6-12	0 01 12-24	0 02 0-6	0 02 0-12 1	0 02 12-24	.0 02 >24 14AU679 4	•0 03 0-0	• 0 03 • 12	.0 FP 0-6 14AUG75						
CORE HORIZONTAL FRACTION ILE LOCATION (INCHES) DATE LABIO	8R 5.38 OI >24 24AUG79	BR 5.38 01 COMP 24AJGT9	BR 5.4 01 0-6 24AUG74	88 5.4 01 12-24 24AUG79	BR 5.4 01 >24 2440679	BR 5.4 01 COMP 24AUG79	BR 5.4 01 COMP 24AUG79	BR 5.4 OI COMP 24AUG79	9R 5.4 01 COMP 24AUG79	BR 5.4 01 COMP 24AUG79	BR 5.4 01 COMP 24AUG79	BR 5.4 01 COMP 24AUG79	8R 5.4 01 COMP 24AUG79	8R 5.6 01 0-6	8R 5.6 01 6-12	BR 5.6 01 12-24	BR 5.6 02 0-6	BR 5.6 02 6-12	BR 5.6 02 12-24	88 5.6 03 0-6	58 5.6 03 6-12	BR 5.6 03 12-24	BR 5.6 COMP 0-6 24AUG79	BR 5.6 COMP 6-12 24AUG79	BR 5.6 COMP 12-24 24AUG79	0.0 01 0-6 14AUG79	1.0 01	1.0 01 6-12	1.0 01	1.0 02 0-6	1.0 02 6-12	1.0 02 12-24 14AUG79	1.0 02 >24 14AUG79 4	1.0 03	1.0 03 6-12 14AUG79	TOTAL OF THE PROPERTY OF THE P	1 0 COMP 47 10 10 10 10 10 10 10 10 10 10 10 10 10	1-0 FP 0-6 14A(E79	2-0 01 0-6 1441679	2.0 01 6-12	2-0 01 12-24	2.0 02 0-6	2.0 02 6-12 1	2-0 02 12-24	2.0 02 >24 14AUG79 4	2.0 03 0-6	2.0 03 0-12	2.0 FP 0-6 14AUG79
CORE HORIZONTAL FRACTION HILE LOCATION (INCHES) DATE LABIO	SPRING BR 5.38 01 >24 24AUG79	SPRING BR 5.38 01 COMP 24AUG79	CONTINGER 5.4 01 0-6 24AUG79	SPRING BR 5.4 01 12-24 24AUG79	SPRING BR 5.4 01 >24 2440679	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING 9R 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 OI COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 OI COMP 24AUG79	SPRING BR 5.6 01 0-6	SPRING BR 5.6 01 6-12	SPRING BR 5.6 01 12-24	SPRING BR 5.6 02 0-6	SPRING BR 5.6 02 6-12	SPRING BR 5.6 02 12-24	SPRING BR 5.6 03 0-6	SPRING 3R 5.6 03 6-12	SPRING BR 5.6 03 12-24	SPRING BR 5.6 COMP 0-6 24AUG79	SPRING BR 5.6 COMP 6-12 24AUG79	SPRING BR 5.6 COMP 12-24 24AUG79	REEK 0.0 01 0-6 14AUG79	AEEK 1.0 01 0-6	REEK 1.0 01 6-12	REEK 1.0 01 12-24	REEK 1.0 02 0-6	REEK 1.0 02 6-12	REEK 1.0 02 12-24 14AUG79	REEK 1.0 02 >24 14AUG79 4	REEK 1.0 03 0-6	REEK 1.0 03 6-12 14AUG79	THERE I OF COMP 0-0 14AU679 4	ACCUMP 12-24 1441030	REFER 1.0 FP D-6 14AIRTO	REEK 2.0 01 0-6 144K79	REEK 2.0 01 6-12	MEEK 2.0 01 12-24	REEK 2.0 02 0-6	REEK 2-0 02 6-12 1	MEEK 2-0 02 12-24	REEK 2.0 02 >24 14AUG79 4	REEK 2.0 03 0-6	XEGK 2.0 03 0−12	REEK 2.0 FP 0-6 14AUG79
CORE HORIZONTAL FRACTION ILE LOCATION (INCHES) DATE LABIO	SPRING BR 5.38 01 >24 24AUG79	BR 5.38 01 COMP 24AJGT9	CONTINGER 5.4 01 0-6 24AUG79	SPRING BR 5.4 01 12-24 24AUG79	SPRING BR 5.4 01 >24 2440679	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING 9R 5.4 01 COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 OI COMP 24AUG79	SPRING BR 5.4 01 COMP 24AUG79	SPRING BR 5.4 OI COMP 24AUG79	SPRING BR 5.6 01 0-6	SPRING BR 5.6 01 6-12	SPRING BR 5.6 01 12-24	SPRING BR 5.6 02 0-6	SPRING BR 5.6 02 6-12	SPRING BR 5.6 02 12-24	SPRING BR 5.6 03 0-6	SPRING 3R 5.6 03 6-12	SPRING BR 5.6 03 12-24	SPRING BR 5.6 COMP 0-6 24AUG79	SPRING BR 5.6 COMP 6-12 24AUG79	SPRING BR 5.6 COMP 12-24 24AUG79	REEK 0.0 01 0-6 14AUG79	AEEK 1.0 01 0-6	REEK 1.0 01 6-12	REEK 1.0 01 12-24	REEK 1.0 02 0-6	REEK 1.0 02 6-12	REEK 1.0 02 12-24 14AUG79	REEK 1.0 02 >24 14AUG79 4	REEK 1.0 03 0-6	REEK 1.0 03 6-12 14AUG79	THERE I OF COMP 0-0 14AU679 4	ACCUMP 12-24 1441030	REFER 1.0 FP D-6 14AIRTO	REEK 2.0 01 0-6 144K79	REEK 2.0 01 6-12	MEEK 2.0 01 12-24	REEK 2.0 02 0-6	REEK 2-0 02 6-12 1	MEEK 2-0 02 12-24	REEK 2.0 02 >24 14AUG79 4	REEK 2.0 03 0-6	XEGK 2.0 03 0−12	REEK 2.0 FP 0-6 14AUG79

ENGINERRING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOTR, ALABAMA

185K4 - SSESSMENTS OF DUT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

		147.707.100	CORE			CONC ENTR	CONCENTRATIONS OF DOT MEASURED IN SEDIMENT-UG/G	DOT MEAS	SURED IN	SEDIMEN	T-06/6	WINIMIN	DOTR
TREAM	411.5	LOCAT TON		DATE	LABIO	(99)	(9/9)	(9/90)	10/9/1	(9/9)	(06/6)	(DE/G)	(06/6)
2 ₹	2.0		f	1440679	4-011	0.13	1.00	1.60	3.30	2.00	2.11	10.74	10.74
AN	2.0		6-12		4-012	0.13		0.78	1.00	0.55	1.30	4.26	4.26
INDIAN CREEK	2.0	COMP	12-24		4-013	0.02		0.40	0.29	0.20	1.00	1.97	1.97
Z Z	3.0		9-6	15AU679		•	•	•	•	•	•	•	•
Z Z	3.0		5-12	15AUG 79		•	•	•	•	•	•	•	•
2 i	0		12-24	15AU679		•	•	•	•	•	•	•	•
2			<b>*2</b>	1 5 AUG 79		•	•	•	•	•	•	•	•
Z :	0		<b>9</b> :	15AU679		•	•	•	•	•	•	•	•
Z	9		6-12	15AUG 79		•	•	•	•	•	•	•	•
<u>ں</u>	0.0		12-24	15 AUG79		•	•	•	•	•	•	•	•
Z :	e m		>24	15AUG79		•	•	•	•	•	•	•	•
z.	0 ·		9	15AUG79		•	•	•	•	٠	•	•	•
، ح	0 m		6-12	15AUG79		•	•	•	•	•	•	•	•
·	300		9-0	15AUG79		•	•	•	•	•	•	•	•
٠,	۲ و د د د		Z1-9	1240679		• ;	•;	• (	• (	• ;		•	• • • •
, ب	o (		9-0	154067	410	72.0	7.01	77.4	10.4	9 .	16.6	76.59	46.07
INDIAN CREEK	۵ ¢		9-12		910	21.0	1.86	1.6	3.33	<b>1.1</b>		11.05	11.05
, د	יי פיי		*7-71	64.00	1017	3 6		200	000		1707	5	7
,	0 0		57.		010	0		5	•	200	•	•	•
, ر	2 0		9 7	1540679		•	•	•	•	•	•	• •	•
ى ر	•		77-6	1540679		•	•	•	•	•	•	•	•
, ,	•		\$7-71	15 406 79		•	•	•	•	•	•	•	•
, .	• 4		9 7	1541679		•	•	•	•	• 1	•	•	•
, ,			1 2-26	15 4 LG 70		•	•	•	•	•	•	•	•
, ,	4			15AIE 79		• 1	• •	• (	• 1	• •	• •	• •	•
INDIAN CREEK	•		-1 S	15A1679		, ,	• •	•		•	• •	•	, ,
·	0		12-24	1540679		•	•	•	•	•	•	•	•
·	0.4		>24	15AUG79	4-059	0.02	94.0	0.22	0.41	0.14	0.16	1.41	1.41
Z	••		9-6	15AUG79		•		•	•	•	•	٠	•
U	0.4	•	6-12	15AUG79		•	•	•	•	•	•	•	•
J	4.0		12-24	15AUG79		•	•	•	•	•	•	•	•
v	4.0		9-0	15AUG79		٠	•	•	•	•	•	•	•
v	0.4		0-12	15AUG79		•	•	•	•	•	•	•	•
u	0.4		12-24	15AUG 79		•		•	•	• ;	•	•	•
ب ح	•	_	9-6	1540679	4-023	0.23		2.00	06.4	Z•50	2.81	10-61	10.61
3 !	0	-	71-9	1540679	\$70-\$	0.00	5:	50.0	1.24	1.24		77.0	12.0
, . : :			* * * * * * * * * * * * * * * * * * *	1541670	670-	70.0	•	0	71.0	6740	17.0	7 .	•
INDIAN CREEK	0	10	6-12	1640679		• •	, .		• •		• •		. •
Z	2.0		12-24	16 AUG 79		•	•	•	•	•	•	•	•
Z	2.0		>24	16AUG 79	4-031	< 0.02	0.19	90.0	0.14	0.13	60.0	0.61	0.63
2	5.0		9-0	16AUG79		•	•	•	•	•	•	•	•
3	2.0		21.5	16AUG 79		•	•	•	•	•	•	•	•
Z	5.0		12-24	16AUG79		•	•	•	•	•	•	•	•
3	S.		9	16AUG79		•	•	•	•	•	•	•	•
V ×	2.0		0-12	16AUG79		•	•	•	•	•	•	•	•
z	0		٩	1640679	87 Q-4	0.24	_	2.61	7.35	2.20	3.85	26.35	26.35
2	0		5-12	16 AUG 79	4-029	0.14	4.90		80 · 1	1.73	2.14	14.24	14.24
2	2	Ė	ا در ده	10406 (%	2	0.40		1.73	•	1901	10.7	1,	1

The same of the same of the

# ENGINEERING AND ENVIRONHENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

7.

MAXIMUM (UG/G) TASK4 - ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

MINIMUM I CONCENTRATIONS OF DOT MEASURED IN SEDIMENT-UG/G DOT-0,P DOT-0,P DOE-0,P DOE-0,P DOE-0,P DOE-0,P DOE-0,P DOE-0,P DOE-0,P DOT-0,P DOT-0, L AB 10 CURE HORIZONTAL FRACTION MILE LOCATION IINCHES! DATE

FOUTHTES: A. REFER TO TABLE 4-1 FOR AN ACCURATE DESCRIPTION OF EACH INDIVIDUAL SAMPLES HORIZONTAL LOCATION. 6. STREAM MILE ABBREVIATIONS:

STREAM

ABSENCE OF DATA FOR INDIVIDUAL SAMPLES ANALYSES WERE PERFORMED ON THE COMPOSITE OF THE INDIVIDUAL SAMPLES.

ABSENCE OF DATA FOR INDIVIDUAL SAMPLES INDICATES ANALYSES WERE PERFORMED ON THE COMPOSITE OF THE INDIVIDUAL SAMPLES.

MAXIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR A BSOLUTE VALUE.

CORE FRACTION INCHES) RE FERS TO VERTICAL DEPTH BELOM SEDIMBNT SURFACE.

MUTLIPLE NUMBERS IN HORIZONTAL LOCATION COLUMN INDICATE A COMPOSITE SAMPLE OF THE LISTED HORIZONTAL LOCATIONS.

LABIO NUMBERS GREATER THAN 4—140 ARE MODIFIED SAMPLES. .......

10 8 . W. A. A. W. S.

## ENGINEERING AND ENERGY WENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WORTS, ALABAMA

TASK4 - ASSESSMENTS OF CUT CONCENTRATIONS AND STHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

CORE FRACTION	<b>y</b>	·	-	-	-	1	2	AMPLES -	۵.	48 3.⊡	EASUREHENT INER THAN					
HLUC (INCHES) D	ATE L	4810 P	DATE LABID MOISTURE	VOL-50L	2.0	0.5	0.125	0.063	•	0.016	900.0	0.00	0.002	0.001	0.0005	REMARKS
BARREN FORK CRI	CREEK	4-027	48.08	7.47	100.00	99.71	98.36	97.30	96.33	92.44	80.76	67.14	56.43	48.65	38.92	
-H-VILLE SPRING	BRANC		,	;	ć	•	;	;		•	;	•	•	;	;	
Χ.	30 A U G 7 9		20.05	7.32	98.20	46.43	17.17	2 3	00.00	3 3	33.37		42.03		33.50	
4			10 02	1000	٠	01.10	200	14.24	<b>7</b> 4	•	47.13	ָרְ רְּיִּ	2007		1000	
, ,	-	100	44.02	9 -	•	91.01	49.64	200	64.28	50.78	53.35	49.07	96.66	31.50	26-63	
	_	101-4	17.58	5.30		98.29	8 3-40	76.84	. (4	63.03	47.64	8	31.50	26-13	21.52	
	-	4-101	17.52	4.65	100.00	98.60	83.30	76.99	•	•	•	•	•	•	•	P.S.
	•	<b>4-10</b> 2	20.5	9.14	•	99.37	96.92	S	83,95	74.52	58.25	46.26	37.69	28.27	27.41	
		4-103	27.80	7.30	•	98.18	67.53	61.65	60.42	•	51.17	44.39	35.14	27.74	21.58	
		+-104	25.08	3.69	-	91.96	65.02	60 .21	20.05	•	45.76	39.74	35.52	32.51	29.50	
			•	•	•	•	•	60.21	58.40	Š	45.76	40.34	36.13	32.51	30-11	P.S.
		4-105	15.22	6.80	60.04	83.85	74.22	72.15	72.15	•	50.50	9 9	28.14	23.81	20.20	
		4-10¢	18.92	8.72		99.50	86.49	83 - 25	91.58	ď١	62.44	45.79	30.80	21.64	15.82	
	•	4-107	28.13	10.35	95.23	59.75	79.71	76.86	76.86	•	65.33	54.57	42.27	32.28	24.60	
		901	32.04	9.12	00-001	60.66	93.68	05.16	91.90	•	83.63	11.08	20.93	36.60	31.25	
	-	501-5	47.14	01.01	98.86	95.69	79.01	15.46	75.46	•	62.63	52,82	43.17	96.98	31.69	
		011-4	20.73	15-14	64.65	72.66	C1.0	71.46	11.46	•	82.00	400	17-19	16.64	34.00	
12-21	2340679	777	90.06	01.0	30.00	100.00	C7 • 1 · 6	70.70	70.07			00.46	66.70	50.46	90.00	•
		110-4	45.02	7.57	6 3	97.79	8 3 3 3	80 .B0	8	75.14	66.64	50.90	97-09	32.37	25.86	L
		4-033	37.55	8	95.21	91.15	78.58	73.23	7 2.50	68.84	60.78	46.33	38.08	30.76	24.17	
12-24	_	4-034	41.25	6.55	100 000	99.58	89.56	87.19	87.19	84.28	74.62	58.82	44.71	35.12	27.21	
		4-036	52.26	8.81	00.00	64.66	88.21	83.49	82.66	75.98	6 5. 12	55.10	46.75	37.57	30.89	
	-	4-030	48.57	7.53	66.65	99.43	95.16	90.52	69.61	600	74.23	61.55	31.6	4.35	35.30	
4		8	41.40	7.72	15.66	98.54	95.98	93.93	92.99	70.06	80.78	67.63	55.42	\$	34.75	
		1 50-5	31.78	. <b>6</b> 6	98.13	89.98	55.15	51.11	20.60	<b>7</b>	41.91	4.7	28.62	23.51	19.42	
	16AUG/9 4	5 6	000	2 4	90.00	97.40	7000	17.55	16.17	8 5	64.44	31.60	44.04	52.00	10.47	
12-24	-	940	29.14	6.51	8	17 66	87.81	83.60	81.93		64.37		45.14	38.46	31.77	
12-24	-	4-040	27.99	6.67	97.76	45.24	8 5.44	81.91	e1.09		ě	52.42	0	37.68	31.13	P.S.
		1-01-1	26.56	4.50	160.00	64.66	52.15	43.85	42.53	39.90	÷	27.19	22.36	19-29	16-66	
	-	1-048	33.58	6.03	95.66	85.62	54.61	50.57	49.56	46.52	ċ	34.39	29.33	25.28	20.13	
	•	640	32.38	6-14	93,35	86.94	76.86	71.36	•	80. 79	59.23	20.67	43.53	37.11	32.11	
	-	090-4	0.7	90.6	97.78	ব :	88.73	85.98	•	97.48	٠.	65.34	54.17	43.85	36.11	
	-	100-4	40-14	96.9	96-15	94.31	88.10	83.82	•	82.14		63.70	52.81	42.75	34.37	
	20 A US 74 45	700-4	*K**	11.32	3 5	1 6	8 7.03	66.18	11.18	81°18	61.0	27.40	\$ 70	000	35.23	
		1007	74017		17.01		000	000	•	10.04	200	24.00	2	72 61	67917	
		1001	14.00	0.00		00.00	90.00	2		, A	64.17	KA 22	26.26		32.17	
		4 6 6 7	74. K2	100	0	84 70	92.70	25.10	90.34	2 3	• 7	40.00	20.05	90		
		4-056	37-66	8.53	0	96.11	75.76	73.10				51-17	62.40	15.00	24.51	
		4-057	32.97	× ≈	98	92.0	77.47	75.43		72 -41	;	55.82	6.01	37.72	30, 93	
		# 50-+	33.0.	6.43	86	96.95	75.51	71.08	• 20	'n		45.49	38.38	200	27-72	
	-	4-054	34.81	8.65	8	93.72	92.54	91.51	ċ	87.85	78.70	90.49	•	43.92	37.52	
	20AUG79 4	4-059	32.40	8.49	8	92.81	96.06	90.06	90.06	87.36	28.62	63.94	51.33		33.32	P.S.
		4-015	47.80	10.34	•	91.59	75.93	73.29	ς.	4		57.17	•	36.11		

17 mm

## ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

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TASK4 - ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

	REMARKS	P.S.			P.S.										P.S.																			P.S.						•				
	0.0005	29.32	31.41	32.17	21.61	42.27	29.10	27.01	32.49	24.51	9:00	37.16		20.33	29.92	35.70	45.89	14.80	34.34	11.67	31.99	97.87		35-13	32.21	31.03	12.26	32.80	37.42	35.24	19.74	29.60	31.4	31-10	,	29.25	36.34	7.2	33-11			33.67	34.10	30-51
	0.001	37.38	38.66	42.37	26.28	51.26	37.10	32.80	39.87	28.77	48.37	45.61	11014	3000	36-88	43.03	\$	16.57	ж. Ж.	14.41	37.64	20.00	20.02	37.83	¥. #	39.24	71-42		42.52	41.73	2	37.4	36.51	243		37.23	4.72	<b>1</b> 0-1	79014		13.34	44.21	41.38	2.
	0.002	46.17	48.22	22.06	32.12	62.05	45.10	39.88	49.47	34.10	56.41	57.04	44.4	4	45.23	50.35	65.96	18.94	9	17.82	46.11	10.04	77.27	46.84	45.56	X:	47.86	17.30	48.47	49.15	28.13	43.53	46.96	47.12	,	45.21	53.11	53.65	20.00	4:	10.07	8	49.48	46.62
NT	- (MM) 0.00	54.97	58.79	39.04	39.71	71.94	56.01	48.88	60.54	41.03	69.37	82.89	07-10	0 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	54.98	59.51	77.44	55.49	56.11	22.43	50° M4	74.64	65.13	58.55	53.41	54.76	59-63	9	55.28	₹,	ů.	53.11	: •	N		ę	~	9	73 1	2	3	67.73	า	~
SURENE	FINER THAN	64.50	10.01	60.00	49.06	80.94	62.56	56.60	67.19	47.8	81.23	78.65	71-01	63-63	63,33	71.41	07.00	26.04	66.16	27.03	5 · ·		45.47	70.57	65.20	66.62	73.63	49.25	66.33	70.47	0.0	67.91	1	79,15		69.15	77.33	82.40	81.0	100	50-14	3	74.67	10.35
ب	9 3	2	2	76.12										90 90													8 3		; F		\$	8.9	. 6		i	2.2	68.51	96.16	92.71	\$ 1	700 8	90.31	86.36	19.61
	ENT SOL 10																															87.0				8	92.	46	92.	•	9	93.13	99.	83.
LES	0.063																															87.06 5.7.06										94.07		
EDIMENT	0.125		8		. 40	v	_	•	-	•	<u>.</u>	w •					ů.	•	æ		Ψ,		•	, .	•	•	<b>U</b> - (	, ,		•	•	99.46		•								9 5.87		
SEI	0.5	•	95.06	97.10	96.62	95.03	84.24	86.49	40.04	87.22	40.04																			_		<u></u>	•			98.82	09.86	99.82	98.20	79.67	3	98.52	69.66	99.74
	2.0	•	97.61	98.63	98.62	98.51	93.84	90.27	¥.98	92.61	98.68	93.43	80.08	63.00	80	99.83	40.66	99.61	64° 66	2.8	8	* 2	200	8	90.00	99.52	88	3 8	\$9.65	90.00	63.35	88	8	99.92		99.61	3.8	8	5.5	8.8	3 5	8	6.66	90.00
	¥ VOL-SOL	•	8.31	7.21	70.0	10.71	10.30	7.16	11.86	8.83	14.89	80	9 (	0 0	25.0	8.27	8.23	6.52	5.07	\$	7.25	13.53	5.48	10.06	8.68	9.85	60°50	3 5	3	10.84	17.53	9.40	9-28	8.11		7.13	2.5	7.36	\$ :	9		\$ 5	6.95	6.38
	Z LABIU MOISTURE	•	34.58	33,33	34.82	60.35	43.90	38.17	Š	42.68	53.19	39,33	32.26	32.47	63.20	! *:	35.42	36.48	31.07	36.16	32.24	55.67	21.01	41.85	40.40	46.70	41.29	50°45	27.83	42.25	32.76	90.00	39.35	38.40		34.18	50.7	43.49	42-11	07.2	300	51.63	48.66	40.49
•	LABIU	4-075	4-016	-6-4	4-076	4-067	4-083	+-084	4-065	4-086	4-087	4-068	\$ 000 ·	00014	-001	4-092	193	-	•	8	160-4		4 6 6 4	10-	<b>←112</b>	1113	1		4-128	4-122	113	1134	136	4-136		-	_	8	00	38	38	010-4	7	<b>4−01</b> 2
	S) DATE	22AUG79	22AUG7 9	22AUG79	22AUG79	22AUG17	22AUG79	22A11G79	22AUG79	22AUG79	22AUG79	22AUG79	22A UG79	22 AUG79	2140679	21411G70	21AUG79	23AUG79	23A UG79	23AUG79	24411579	24AUG79	24AUG79	SANG79	24 AUG79 244 HG79	24 UG79	2+AUG79	-	14AUG79	144UG79	14AUG79		1440679		1440679	14AUG79	14AUG79							
CORE	FRACTION HLOC (INCHES)	å	-		× × ×			ţ	٩	9		21-9		77.		9-12		-		<b>*</b>		3				_	<b>1</b> 2-21	3 5	į		_	ş <u>1</u>	_	12-24	-INDIAN CREEK					12-21		j		9-12
		COMP								COMP	500					<b>1</b> 00	4 0 0	2		9				77			3			_				CO1	-1M01A	<b>1</b> 0			5	3	<b>3 5</b>			8
	HILE	4.2	**5	7.4	4.2	4.2	4.2	4 .2	4.2	4.2	4.2	7.4	,	7.4		4.2	4.2	4.2	4.2	4.2	7.	•		,	8	2.0	0.0	4.17	5.37	5.38	4.	9 4		5.6	- 1	٩ o	9	9	-	9 .	3 -	20	7.0	2.0
-	-		-		•	•		_			_		,	-		,	-		-			_		,	•		-		•	•		_		_		J	,		_		,	-		•

Section 1

## ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABANA

TASRA - ASSESSMENTS OF DDT CONCENTRATIONS AND OTHER CONTAMINANTS IN SEDIMENTS IN REDSTONE ARSENAL VICINITY

		REMARKS						P.S.		P. S.									P.S.	
-		60000	33.24	32.70	33.86	32.76	35.99	•	30-61	29.68	30.93	26.24	32-36	32.40	33.59	26.84	28.69	27.33	¥.75	
		0.001	41.79	42.01	40.63	41.86	43.38	•	30.06	36.03	37.89	36.08	41.35	42.21	41.99	33.8	35.25	36.12	38.22	
		0.002	51.29	54.50	50.78	50.97	53.53	•	51.01	48.23	44.85	43.14	50.34	52.03	43.39	41.83	41.80	46.85	48.02	
1	Î	0.004	65.69	69.37	57.56	62.80	63.68	•	64.92	62.14	53,35	51.77	62.92	61 -85	48.99	52.09	51.64	64.19	60.77	
HEA SUREMENT	FINER THAN	800.0	78.83	85.23	70.25	77.36	76.60	•	81.62	76.83	62.63	63. %	77.31	84.43	56.08	63.93	63.94	79.06	14.39	
		0.016	88 •33	95.14	79.56	87.37	85.83	•	8	90°08	11.91	72.16	84.50	42.46	65.01	74.19	75.41	92.73	92.13	
- PHYS1	ENT SOL	0.031 0.016 0.008	93.08	97.12	83.79	90.10	\$00.	•	92.75	91.82	75.77	76.87	87.19	97.19	69.28	78.14	81.15	96.63	97.03	
SAMPLES - PHYSICAL	PERCENT SOLIDS	0.063	94.98	99.10	84.64	91.01	92.29	90.32	92.75	92.75	77.32	78.44	89.89	98 -17	86.69	78.93	81.97	97.61	98.01	
IN BAT		0.125	60.06	99.55	99.76	94.43	95.49	93,39	95.20	•	81.70	84.12	91.77	98.72	74.38	82.42	8 5,90	98.29	98°44	
SEDIMBAT		0.5	100.00	100.00	96.38	98.54	99.34	98.28	99.13	•	99.32	98.76	75.00	99.73	90.15	97.63	97.60	99.91	41.66	
		2.0	100.00	100.00	2.6	7.00	22.66	99.62	99 265	•	100.00	99.65	100.00	100.00	96.72	99.29	99.28	100.00	100,00	
		105-10 A	6.85	7.34	8.76	7.93	7.5	7.15	9.92	•	3.72	5.94	6.21	7.68	5.76	5.40	60.9	7.07	7.00	
	*	LABID MOISTURE	40.01	45.16	54.07	****	48.49	48.53	15.8	•	48.46	44.05	42.24	14.94	36.86	35.49	37.95	11.5	¥1.4	
		LABID	4-013																4-031	
		HLOC (INCHES) DATE	14A UG79	1*AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15AUG79	15A UG79	16A UG 79	1640679	16 AUG7 9	16A UG79	1640679	
8	RAC TION	LINCHE	. 12-24																	
	Ī		<b>8</b> 00	70		9	800	3		<b>1</b> 50	100		Ŝ	03	9	50	9	5	10	1
		116	0.4	0 ~	0.0	3.0	••	0.0	0.5	3.0	•	•	•	•	č.	×.0	3.0	O	5.0	

FOOTNOTES: 1. REFER TO TABLE 4-1 FOR AN ACCURATE DESCRIPTION OF EACH INDIVIDUAL SAMPLES HORIZONTAL LOCATION (MLDC). 3. STREAM MILE ABBREVIATIONS:

y set in white of a

FP - FLOOD PLAIN

LCS - LOOP CROSS SECTION.

THE ABBREVIATION (COMP) REFERS TO A COMPOSITED SAMPLE,

THE ABBREVIATION (P.S.) REFERS TO A PRECISION SAMPLE.

CORE FRACTION (INCHES) REFERS TO VENTICAL DEPTH BELOW SEDIMENT SURFACE.

PRIORITY POLLUTANT DATA

- PARTICIPATION IN

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTANI MATION HUNTSVILLE SPRING BRANCH, INDIAN CREER, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

## TASK4 - PRICRITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

COMP	COMPOUND NAME	SEO	SED [MEN 1 (UG/G)	z ~	WASEX (06/4)	100/1	(16) (16/1)
				•			
	M-VILLE SPRING BRANCH 3.0. SAMPLED	S	AUG 79				
		Ţ	090	4	190-	4-065	ر دو
. ئـ	ACENA PHIMENE	<b>~</b> 、	00.7	<b>~</b> \	27.00	7	8
•		, \		<b>,</b> \		\ \	3 8
• 6	19794-INICHTON CORNERS	<b>,</b> \	3 8	<b>/</b> \	200	7	3 6
•	MEXACE CAUGENZENE	<b>,</b> \	3 8	<b>/</b> \		, ,	3 8
77	PEARCH, UKUE HARKE	<b>,</b> ,	3 5	<b>/</b> \	3 8	\ \ \	3 8
= :		<b>,</b> \	3 8	<b>/</b> \	300	\ \	3 8
		<b>~</b> \	200	<b>V</b> \	200	\ \	36
<u>.</u>	2 CHICKGETH YL VINYL PIMER IMINED)	<b>,</b> \	3 6	<b>,</b> \	30.50	, v	3 8
9 5		<b>/</b> \	25.25	/ \	3 6	\ \ \ \ \	36.5
23.	PAPATH COURTS CREAT	· •	0.25	<b>′</b> ∨	27.00	7	8
7	2-CHI DEDPIE MI	· ~	0.25	· •	27.00	< 29	25.00
2	1.2.DICHLORDERZENE	· •	2.00	<b>'</b>	27_00	25	25.00
76	1.3-DICH.OR OBEN ZENE	~	2.00	~	27.00	× 2	25.00
27.	1.4-0 JC H. DR. OBEN ZENE	· <b>~</b>	2.00	<b>~</b>	27 200	2 2	25.00
28.	3,3°-01CHLOROSENZIDINE	~	2.00	<b>V</b>	27.00	× 25	25.00
31.	2,4-DICHLOROPHENOL	<b>~</b>	0.25	<b>v</b>	27.00	< 29	25.00
*	2,4-DIMETHYLPHENDL	<b>~</b>	0.25	<b>v</b>	27.00	<b>2</b>	25.00
35	2,4-DINITROTOLUENE	<b>v</b>	2.00	<b>v</b>	27.00	< 23	8
36.	2, 6-DINITROTOLUENE	<b>v</b>	200	<b>V</b>	27.00	× 5	25.00
37.	1,2-DIPHENYLHYDRAZINE	<b>,</b>	2.00	V 1	27.00	× 1	865
<b>6</b> 6	375	<b>~</b> \	8 8	V 1	27.00	, r	38
<b>;</b>	A-CHICACPHENT PHENT BIRES	<i>,</i> \	3 8	<b>/</b> \	200	\ \ \ \	3 6
•	ATOREMENT TARME BUTCH	<b>,</b> ,	3 6	<b>/</b> \	27.00	, ,	38.
,	BISING CONTROL OF THE REPARE	<b>/</b>	2-00	<b>/ \</b>	27.00	7 .	25.00
	TEXACIDADELIADIESE	· •	2.00	· ~	200	<b>2</b>	25.00
	HEX ACHLOROC VCLOPENTADIENE	· •	2.00	<b>'                                    </b>	00.12	\ \ \	25.00
×		~	2.00	~	27.00	< <b>2</b>	25.00
55	_	~	7.00	<b>v</b>	27.00	< 29	25.00
56.	_	~	2.00	<b>v</b>	27.00	< 5	25.00
57.	2-N1TROPHENOL	~	0.25	V	27.00	<b>7</b>	25.00
56.	+-NITROPHEND.	~	0.25	<b>v</b>	27.8	×	25.8
59.	2,4-DINITROPHENOL	<b>v</b>	0.25	V	8 %	<b>2</b> ×	25.8
•0	4.6-DINITRO-O-CRESOL	<b>V</b>	0.25	<b>V</b>	27.00	×	8.5
•	N-MITHOSODIMETHYLAMINE	<b>~</b> `	8	V '	27.00	× '	25.00
62.	N-21780SODIPHENYLAMINE	<b>,</b>	8	<b>Y</b> '	00.12	N .	25.00
63	A-BITROSCOI -A-PROPYLAMINE	۷ ۱	3	V '	2000	\ \ \	81
•	PENT ACHLOROPMENOL.	<b>~</b> \	Ç,	<b>'</b>	800	\ \ \	38
<b>.</b>		•	200	<b>/</b> \		, i	3 8
9	_	`		<b>'</b> \		, i	3 8
67.		<b>,</b>	200	•	27.00	, i	81
99		<b>ر</b> ر	3 8	<b>'</b>	8:5	, i	3.5
•	-10 -10	•	5	<b>,</b>		, i	8.5
ė	DIETHYL PHTHALATE	•	200	٧			2
				,	3	\ /	3

ENSINEERING AND ENVIRONMENTAL STUDY OF DOT CONTANTMATION MANTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WITH ALABAMA

## TASK4 - PRIDRITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

			1	0	DILUTION	<u>ت</u> :	ELUTRIATE	
OMP	DRPCAND HAME	2 3	196.46)	<b>-</b>	MARCA (15/2)	-	(1/5/L)	
		: :				• •		
72.	BENZOIA JANTHRACENE (1,2-BENZANTHRACENE)	~	2.00	<b>~</b>	27.00	~	25.00	
73.	BEN 20(A)PYRENE (3,4-BEN ZOPYRENE)	~	2 000	<b>v</b>	27.00		25.00	
:	3,4-BEN 20FLUDR ANTHENE	<b>~</b>	8.2	<b>~</b>	27.00		25.8	
\$	BENZO(K.) FLUGRANTHANE	<b>~</b>	2.00	v ·	27.00		25.00	
ė;	_	<b>~</b>	86	<b>~</b> \	27.00	V 1	25.88	
	acenaphing ene autho acea	· (	38	<b>,</b>	2000	<b>,</b>	36	
2	BENZOIGHI) PERY LENE (1.12-BEN ZOPERY LENE)	· •	200	· v	27.00		25.00	
0	FLUORENE	~	90° 7	<b>~</b>	27.00		25.00	
81.	_	~	2.00	<b>v</b>	27.00		25.00	
85.	UIBENZO (A, H)ANTHRACENE (1, 2, 5, 6-0 IBENZANTHRACENE	<b>~</b>	2.00	<b>~</b>	27.00		25.00	
63	IDENO(1,2,3-CO)PYRENE (2,3-O-PHENYLENEPYRENE)	<b>~</b> \	8	<b>~</b> \	27.00		8.8	
		<b>,</b> ,	3 8	<i>,</i> ,		<b>~</b> \	3 8	
90	DIFLORIA	<b>′</b> ∨	8	· •	00	· •	8	
91.	_	~	00.4	<b>~</b>	1.00	~	8.	
92.	-	m	380.00	<b>v</b>	2.00		6.7	
43.	4,400E(P,P'00X)	•	35.00	~	0.50	~	0	
;	•	٦ ,	175.00	`	2.50	•	28	
	PICACOCITA NATIONAL PAR	<b>,</b> \	3 8	<b>/</b> \	3 6	<b>/</b> \	3 8	
		/ 🗸	8	/ <b>v</b>		<i>/</i>	3 8	
9	ENDRIN	· ~	8	· <b>~</b>	00.	· •	80	
•		~	8	<b>~</b>	1.00	~	8.	
00		~	00.4	<b>~</b>	1.00	~	 8	
5	HEPTACHLOR EPOXIDE	<b>~</b>	8	<b>V</b>	00.4	~	8	
200	A-BHC-ALPHI	<b>~</b>	8	<b>~</b> `	00.	<b>~</b> ·	8	
69	B-BMC-BETA (MEXACHLOROCYCLOM EXAME)	<b>~</b> \	8	<b>~</b> \	000	<b>~</b> `	88	
9	_	/ <b>~</b>	8	, <b>~</b>	00-	/ <b>v</b>	8	
8	_	~	8	~	00	~	8	
07.	PCB-1254 (ARDCLOR	~	00.4	<b>~</b>	1.00	~	8.	
80	PCB-1221 IAROCLOR	<b>~</b>	8	<b>Y</b>	00.1	~	8:	
6	PCB-1232 (AROCLOR	<b>~</b> '	8	<b>~</b> ·	8	<b>~</b>	8	
9 :	PCB-1248 (ARUCLUR 1248) PCB-1246 (ARUCLUR 1248)	·	9	· •	00.1	<b>~ ~</b>	88	
12.	(ARDCLOS	· •	9	· •	0	· ~	8	
13.		<b>~</b>	4.00	~	1.00	~	8.	
	4. (4.44)	•						
	INDIAN CREEK SOUP SAMPLED IS AUG ?	•		,		•		
_		٠,	-017	÷ .	-019	•	2,50	
	_	/ <b>\</b>		· •	25.00	<b>/</b> •	32.5	
	-	<b>′</b>	2.50	· •	25.00	· •	22.8	
•		~	2.50		25.00	~	25.00	
12.	MEXACHLORDE THANE	<b>V</b>	2.50		25.00	<b>Y</b>	25.00	
	DISCONDENINAL DELANA	<b>~</b> `	2.50	V (	88	<b>~</b> \	88	
	2-CHLOROFINY WINYL ETHER (MIXED)	<i>,</i>	200	/ <b>v</b>	200.52	<i>,</i> ~	25.00	
ı			•		· · · · · · · · · · · · · · · · · · ·		: : : :	

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Į.

	ISK4 - PRIORITY POLLUTANT/ELUTRIATE TEST OA	DATA CONCENTRATIONS	CEN TR	AT 10N	S		
				DILUTION	8	ELU	ELUTRIATE
COMPOSING NAME		SEDIMENT	בי אר	MATER	« <u>-</u>	<b>\$</b> =	WATER
			:		;	! i	1
	2-CHLORONAPHTHALENE	<b>~</b> ·	2.50	< 25.00	0	2 Y	88
Zl. 2,4,6-T	KICHLOROPHENOL	o (	\$25		8	~ .	8
	PARACHLORUMETA CRESOL	<b>•</b>	\$ . S	Ç	9 6	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	25.00
		۰ ر د	0 5	ġ;	3	\ \ \ \	3 8
	1 2 DECEMBER AND CONTRACTOR	۰ ۰ د د			3 8	ÿ 7 / \	3 8
			2 6 7		3 5	, . , .	3 8
	A. A. D. C.			, X	2 6	; ; / \	3 8
	2-4-DICE CREEKE		2 5		2 6	, v	8
34. 2.4-DIM	ETHYLPHENOL		.25	25.00	8	7	25.00
	2,4-DINITROTOLUENE	<b>~</b>	8	< 25.	8	~	8
	ITROTOLUENE		0	< 23 ×	8	~ ~	8
	1,2-DIPHENY LHYDRAZINE		8	< 25.	8	۲۵ ۷	8
			20		8	~	8
	4-CHLOROPHENYL PHENYL ETHER		92	. 25 . 25	0	~	8
	PARKAL PARKAL ETARR		9		8	~	8
45. BISIZ-C	BISIZ-CHLOROISOPROPYL) ETHER		8		0	~ ✓	8
	A CR CR THOXY) METHANE		0		Q	~ ·	8
SZ. HEXACHL	MEXACHLORUBUT AD LENE		D. (	Ċ:	8	7 i	8
	MEXACAL UNDER THE ME AD I ENE			Ċ×	3 8		38
SK. MABUTUA		<b>,</b> ,	2.50		3 8	i i v v	3 6
16. NITROBENZENE			200	X	8		8
	TENO.		-25		8	\ \	8
-	PHENOL		•25	< 25.	8	×	8.8
-	2,4-0 IN ITROMENOL		Ŋ.		8	~ ~	8
	4.6-DINITRO-O-CRESOL		528	\$2 >	8	~	8
			8		8	\ \	8
DM 11 M-1 20	SOUTHERNY AND THE		9		8		8 8
	ATALING SOLD ATTENDED TO THE STATE OF THE ST		٠ ا		3 6	\ \ \ \ \	3 8
A PERIAL			0 4		3 8	ų ř	3 8
	THE MULTING HEXVIII BUT UALATE				3 6		3 8
	BLIVE BENZY: DETENTAL ATE		9		3 8	i	8
_	TYL PHTHALATE		20	×	0	` ~	8
	DI-W-OCTYL PHTHALATE		S	\$	8	~	8
	DIETHYL PHTMALATE		8	< 25.	8	~	8.8
	DIMETHYL PHTHALATE		8.	25	8	<b>7</b>	8.8
	JANTINACENE (1,2-BENZANTHRACENE)		2.50	<b>22</b> ×	8	~ V	8.8
	JPYRENE (3,4-BEN ZOPYRENE)		• 50	\$	8	ži V	8
74. 3,4-BEN	3.4-BER ZOFL UDRANTHENE	<b>~</b> ·	2.50		0° 50	× .	25.80
	DERZO IX JFLUORANIMANE		8		8	Ni (	8
_	1		9		8	~ ·	8
-			9		8 8	N	8
	CENT CAR		2 9	Ç 1	3 8	ر د د	3 8
TA DENTOLENE	HIPERILENE (1912-BENZUTENILENE)		2 5	0 X	3 8	v	3 8
			2.50			1 N	8
					1		
A2 DIBERTO	つくきになって 1.4 1.4 1.4 1.6 1.6 1.6 1.7 1.7 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4		ç		25.00		8

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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

## TASK4 - PRIORITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

	CED THENT	8.	DILUTION	7 1	ELUTRIATE
CHPOUND NAME	(06/6)		(106/L)	k — (	(16/1)
_	< 2.50	~	25 .00	~	25.00
_	< 0.25	~	9.0	<b>~</b>	8:1
	< 0.25	~	1.00	<b>~</b>	9.1
•	< 0.25	~	1.00	<b>~</b>	8.1
•	13.00	~	1.00	<b>~</b>	8:
•	<b>*</b> •00	~	0.50	<b>~</b>	0.50
-	2.8		0.86	<b>~</b>	5.0
95. A-ENDOSULFAN-ALPHA	< 0.25	~	80.	<b>~</b>	8.1
96. B-ENUCSULFAN-BETA	< 0.25	~	1.00	<b>~</b>	1.00
	< 0.25	~	00.1	V	9:1
	< 0.25	~	00-1	<b>~</b>	8:1
	< 0.25	~	1.00	<b>~</b>	8*1
	< 0.25	~	1.00	<b>~</b>	8.1
HEPTACHLOR (	× 0.3	~	1.00	<b>~</b>	8.1
_	< 0.25	~	.8	~	8.1
_	< 0.25	~	1.00	<b>v</b>	8.8
-	< 0.25	<b>v</b>	1.00	<b>~</b>	8:1
G-BHC-DELTA (HEXAC	< 0.25	~	2.8	<b>~</b>	8.8
MCB-1242 (ARDCLOR )	< 0.25	~	1.00	<b>~</b>	8:
PCB-1254 (AROCLOR 1	× 0.3	~	000	<b>~</b>	8
PC8-1221 (AMDCLOR 1	< 0.25	~	1.00	~	8:8
PCB-1232 (AROCLOR	< 0.25	~	8.1	V	8:1
PCB-1248 (ARDCLOR	< 0.25	~	80.	<b>~</b>	8.
PCB-1260 (ARDCLOR	< 0.25	~	00.1	<b>~</b>	8:1
_	< 0.25	<b>v</b>	90.	<b>~</b>	8:1
13. TOXAPHENE	< 0.25	<b>Y</b>	00.	~	8.8

· rice directly

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION

į		PRIORITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS	SNOT LONS	
5	COMPCUMO NATE	SEDIMENT (UG/G)	DILUTION WATER (UG/L)	ELUTRIATE MATER (UG/L)
	INDIAN CREEK 1.00, SAMPLEU 14 AUG COMMOSITE FROM ALL CORE FRACTIONS	5. 5.		
		4-007A	4-00B	\$00 <b>-</b> \$
Ť		0.03	0.08	0.08
Ñ	_	0.75	< 0.08	0.81
M,		0.78	0.48	0.18
i i		16.1	99.0	0.29
* 4		10.1	0.12	0.23
, A		36.28	1.6	17.1
e c	_	0.63	0-20	
	_	20.1	00-1	8
10.		•	9	2
		200.00	20.017	8
2	_			
		00-1		
14.		12.00	2.00	2.8
	INDIAN CREEK 3.00, SAMPLED 15 /	AUG 79		
	,	4-015	4-019	4-050
ř		0.27	0.08	0.08
7.	. 001(P,P)	7.61		0.92
m		12.4	94.0	0.56
Ť	_	4.07	0.56	1.22
'n	_	2.40	90.0	0.45
•		4.97	0.07	0.52
ř	-	28.60	1.23	3.71
•	_	0.57	0.00	&. • 0 • ×
•		<b>5°</b> 00		8.
0.		48.00	00° 08	10.8
Ï		330.00	8°00	30.00
77	_	28.00		
3		% -1 •		< 10.80
Ž		2.0	% *	
5	_	99	00°S	00°5 ×
<u>.</u>	_	•	_	
::		0800		00.1
<b>P</b> (			00.01	
•				

remained a

4-021 4-019 4-022 0.16 < 0.08 < 0.08

INDIAN CREEK 3.00, SAMPLED 15 AUG 79 COMPOSITE OF ALL SAMPLES

1. 00T(0,P)

ENGINEENING AND ENVIRONMENTAL STUDY OF DOT L'ATANTION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANUS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK4 - PRIGRITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

		DILUTION	w
	SEDIMENT	WATER	MATER
COMPOUND NAME	100/01	1967	
ì Ì			0.33
144A)100 °7	66.		<b>X C</b>
	4.42		
	000	90.0	0.10
_	3.07	0.07	0.05
7. TOTAL DDIR	14.30	1.23	1.50
_	0.78	< 0.20 >	22°0 >
_	1.00		
-	94	30.00	20.00
	310.00	00.02	10.00
12. MICKELLTOTAL)	31.00		
	% ~		× 10,00
	11.00	< 5.00 <	3.8
_	•		•
_	•	_	•
17. SELENTUMITOTAL)	•		•
	•		•
19. THAL LUM (TOT AL)	•	20.	•
20. ANTIMONY (TOTAL)	•	< 2.00	•
H-VILLE SPRING BRANCH 0.00, SAMPLED 16 AUG		r	
	4-035	î	4-037
1. 001(0,P)	0.12	80°0	
_	1.99	0.33	1.
	21.0	6.03	8 1 5 c
	1.67	7.1	2 :
5. DOE (0,P)	0.63	0.10	24.0
_	0.62	21.0	8 °
	5.65		
HERCURY ( TOT		07.0	07.0
_	2001	9 6	3.5
10 CUPPER LIBER	220.00		30.01
_	35.00	20,00	~
-	1.00		~
14. PRSENIC (TOTAL)	20.00	< 2.00	8.00
		ş	
COMPOSITE FROM ALL CORE FRACTIONS	SAMPLEU IF AUG !	•	
!	4-050	150-5	4-052
1. 007(0.P)	0.21	8000	90.0
2. DOT(P,P)	12.70	0.00	
	00.	1.30	3.0
4. 000(P.P)	5.40	2.35	
	1.21	0.12	
_	3.40	0.26	0.26
7. TOTAL DOTA	26.90	**11	

O

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTANIMATION MANATSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELFR RESERVOIR, ALABAMA

## TASK4 - PRICRITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

			MATER	WA TER	MA TER
0	COMPOUND NAME	(9/90)	(1/90)		(100/L)
		10.01		<b>'</b>	0.20
•		°1 ×	× 1.00	~	8.
0.	-	20.00	20.00		8
7	ZINCITOTAL	180.00	•	~	8.0
77	NICKE L(TOTAL)			<b>V</b>	20.00
13.	ABERTALIUM 1 OTALI	8°.''	00°01 V	<b>~</b>	88
		75	9		3
	H-VILLE SPRING BRANCH 3.00, SAM	SAMPLED 20 AUG 7	æ		
		4-060	4-064	4065	<b>.</b>
-	_	2.60		~	80.0
2.		166.00	0.13	~	8
,	(4° 0)000	9	200	•	2.71
		102.00		~	3 6
: ;		29.40	0.28		3.57
	•	349.00	6-12	m	33.50
•	_	16.0	× 0.20	~	0.20
2		8.2		<b>V</b>	8
=		340-00			80
2	-	35.00	8	~	20.00
13.	_	× 1.00		<b>v</b>	10.00
\$ :	ACSENIC (101 AL.)	00.6	~ 1	,	2.00
10.		72,00		, <u>,</u>	3 5
1		<b>2</b>	00-1	· '	8
16.		2.00		~	10.00
.61	-	% **		~	50.00
20.	ANTIMONYITOTAL)	0 -0			8
	H-VILLE SPRING BRANCH 3.00, SAMPLED 20 AUG		æ		
		4-066	4-064	4-067	_
-		1.00	0.25		0.0
2		83.00	0.13		7.43
'n		08.6	700		Ķ
		00.4	0.28		7 9
•	DOE(P,P)	7.8	0.28		£
<b>.</b>	•	151-00		-	8
		64.0	02.0	~	02.0
0	_	33.00	200	.,	20.02
11.		340.00	00° 02		9.01
12.	_	34.00	_	~	20.8
•					,

- Proposition of a

ENGINEERING AND ENVIRONMENTAL STUDY OF DUT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WILLS SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS

## TASK4 - PRIORITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

	ARSENIC (TOTAL) CHROMIUM(TOTAL) LEAD(TOTAL) SILVER(TOTAL) SILVER(TOTAL) SILVER(TOTAL) ANTIMONY(TOTAL) ANTIMONY(TOTAL) ANTIMONY(TOTAL) ANTIMONY(TOTAL) BOD(10,P) BOD(10	BRANCH 4.50, SAMPLED 21 AU ALL CORE FRACTIONS +-072 68- 68- 15- 47- 67- 15- 67- 15- 67- 15- 67- 15- 67-	\$ \$00000000000000000000000000000000000	i T	•	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	-VILLE SPRING CMPOSITE FROM	12 1 % 80 %	\$ \$020220m20		1	000000000000000000000000000000000000000
	H-VILLE SPRING COMPOSITE FROM	12 1 0 6 6	\$ 000000000000000000000000000000000000		1	00000000000000000000000000000000000000
	H-VILLE SPRING COMPOSITE FROM	2 1 0 6 6	2 40 5 0 5 0 5 0 6 0 0 0 0 0 0 0 0 0 0 0 0		1	000000000000000000000000000000000000000
	H-VILLE SPRING COMPOSITE FROM	12 1 9 8 6	2 40 5 W 5 C C C C C C C C C C C C C C C C C			0.000 0.000
	H-VILLE SPRING COMPOSITE FROM	12 1 9 8 6	7		1 " "	000000000000000000000000000000000000000
	-VILLE SPRING OMPOSITE FROM	12 + 9 6 6	7	7		08688888
	H-VILLE SPRING COMPOSITE FROM	12 + , , ,	7	7		000000000000000000000000000000000000000
	COMPOSITE FROM	17 + 9 8 6	6 000 000 000 000 000 000 000 000 000 0	7	1	888888888
	2	1 0 0	2020200000	7		20 00 00 00 00 00 00 00 00 00 00 00 00 0
	T (0,P) T (0,P) T (0,P) D (P,P) E (0,P) E (0,P) E (P,P) E (P,P		000000000000000000000000000000000000000			888777888
	119,9) 010,9) 010,9) 610,9) 610,9) 74.00RR RCURY(TOTAL) PPER(TOTAL) CKEL(TOTAL) RYLLIUM(TOTAL) SENIC (TOTAL)		•			866666666666666666666666666666666666666
	010.P)  0(P.P)  E(P.P)  TAL DOTR  RCURY (TOTAL)  PPER (TOTAL)  CKEL (TOTAL)  RX-LITOTAL)  RX-LITOTAL)  RX-LITOTAL)  SENIC (TOTAL)		·			***********
	0 (P ,P )  E (0 ,P )  E (0 ,P )  TAL DOTR  RCURY (TOTAL)  PPER (TOTAL)  CKELI TOTAL)  RYLLUM (TOTAL)					**************************************
	E(O,P)  E(P,P)  TAL DURA  RCUL DURA  DMIUMITOTAL)  PPER(TOTAL)  CKELI TOTAL)  SENIC (TOTAL)	# # 60 F 6				989888
	E(P,P) TAL DOER RCURY(TOTAL) DMJUMTTOTAL) NC(TOTAL) NC(TOTAL) RC(TC(TOTAL) SPER(TOTAL) SELITOTAL) SENIC(TOTAL)					22222
	TAL DUFR RCURY(TOTAL) DHIUMITOTAL) PPER(TOTAL) CKEL(TOTAL) RYLLIUM(TOTAL) SENIC(TOTAL)					28888
	RCURVITOTAL) DMJUMTOTAL) DPERITOTAL) NCITOTAL) CKELITOTAL) RYLLIUMITOTAL)		·			2888
	DMIUMITOTAL) PPER (TOTAL) KK (TOTAL) KK ELI TOTAL) RYELIUM (TOTAL) SENIC (TOTAL)					888
	PPERITOTAL) NC(TOTAL) CKELI TOTAL) SENIC(TOTAL)		2.00			88
	NC(TOTAL) CKEL(TOTAL) RYLLIUM(TOTAL) SENIC(TOTAL)	2			_	8
	CKEL(TOTAL) RYLLIUM(TOTAL) SENIC (TOTAL)	5	300.00			
	RYLLIUM(TOTAL) SENIC (TOTAL)	Ž	<b>26.00 &lt;</b>		v	50.00
-	SENIC (TOT AL)	•		2		10.00
		Ä	10.00 <	2.00	~	2.8
	H-VILLE SPUNG B	BRANCH 4.20, SAMPLED 22	AUG 79			
		LE CURE TRACILORS		080-4	180-4	1
7	001(3.P)		9	0.20	•	3.98
	D07 (P,P)	06				13.90
3	(4,0)000	ò	64.50	1.1		6.33
	000(P,P)	60	62.00	1.59		8.4
_	006(0,0)	7	12.00	0.10		0.92
	DDE(P,P)	4	48.00	0.21		2.08
	TUTAL DOTR		1244	¥.	m	2.10
	MERCURY (TOTAL)				v	0.20
	CADMIUM(TOTAL)	<b>*</b>	× 80.		~	8
	COPPER(TOTAL)	2	29.00	10.00		800
	ZINCI TOTAL)	300			~	9.01
12.	NICKEL(TOTAL)	~ ,				800
_	BERTILLUM (101 AL )	<b>~</b>		3 '		3 6
14. A	ARSENIC (101 AL)	<b>~</b>	10.00	200	~	3

H-VILLE SPRING BRANCH 5.00, SAMPLED 23 AUG 79

4-115 4-116 4-117

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ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS MYEELER RESERVOIR, ALABAMA

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## TASK4 - PRIGRITY POLLUTANTZELUTRIATE TEST DATA CONCENTRATIONS

OILUTION EI T WATER (UG/L)	118.00 0.12 4.08	0.22	2-10	2.05	0.18	0.24	5.11 6	< 0.20	3.00	50.00	> 00.02	> 00°05 >	< 10.00 <	2.00	2LED 24 AUG 79	4-120 4-1	0.36	1.51	0.36	12.90 0.79 1.43	•	OK. 21 OK. 14. OC. 45.4	> 0.20 >	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	25.00 10.00	2000	> 9°9°	< 10.00 < 10.	36.00 < 2.00 5.00	1.ED 24 AUG 79	4-123 4-1234 4-124	00 0013	0.14 20		0.28	<b>0.0</b>	0.07	0.04	< 0.20 <	× 1.00 ×	00° Q1 >	320.00 20.00 < 10.00
COMPOUND NAME	19-0100		( a 1) 000	00016.9	900 (0.0)	006(0,0)	TOTAL DOTR	HERCURY (TOTAL)	CADMIUM(TOTAL)	COPPER(TOTAL)	ZINC(TOTAL)	NICKEL! TOTAL)	BERYLLIUM (TOTAL)	ARSENIC (TOTAL )	M-VILLE SPRING BRANCH 5.40, SAMPLED 24 AUG COMPOSITE OF ALL 4 FRACTIONS		001 (0,0)	DOT (P, P)	0001000	000(8,9)		JOTAL DOTA			COPPERITORAL	21MC (101AL)	MICKEL(TOTAL)	BERYLLIUM(TOTAL)	ARSENIC (101AL)	M-VILLE SPRING BRANCH 5.38, SAMPLED 24 AUG	COMPOSITE OF ALL 4 FRACTIONS	mrto.e.	(9,9)	(4.0)000	(4,4)000	006(0,0)	DOE (P,P)	TOTAL DOTR	MERCURY(TOTAL)	CADMIUM (TOTAL)	COPPERI TOTAL)	21MC ( TOTA L.)

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ENGLARGRING WID BRAINDHAMBIND OF DOT CONTARINATION HUMBNICLE CONTARING THE NATERS HOW THE CALL CALL CALLAND AND HATERS HAND ALLABAMA

TASKA - PATGALTY POLLUTANYELUTRIATE TUST DAFA CONCETTRATIONS

		いてお	1081
13. EENYLLIUMITOTAL)	50°00	10,00	10.8 8.8
VIGATO	H-VILLE SPRING BRANCH 5.37, SAMPLED 24 AUG 35 COMBDISTE OF 0-6, 6-12, 12-24 COME FRACTION		
	4	-126A	4-127
1. DOT (G.P.)	1163	0.11	8.19
	10236	0.30	604
	147.00	0.15	30.40
	458.00	0.19	8.77
	> 00*11	0.0	5.85
	00.844	0.05	2°34
7. TOTAL DOTR	12566	0.63	3
		0.20	& • •
	<b>v</b>	1.00	8
10. COPPERITOTAL)	<b>v</b>	00.01	20.00
		0°0	
	34.00	S S	
13. BERYLLIUM(TOTAL)	<b>~</b>	10.00	× 10.00
	00*6	3.00	1%0
	4-129 4-	4-126A	4-130
	533.00	0.11	18.70
2. DOT(P.P)	2012	0.30	28.90
	14.20	0.15	5.15
		61.0	5.49
	> 08.290	0	3.33
6. DDE (P.P.)	00*407	000	50.00
		20.0	0
	3	07.0	
-	•	200	3:1:
_	~	00.01	
		00.01	
_	> 00.76	8	•
13. BERYLLIUMITOTAL)	> 0°1 >	00.00	× 10.00
14. ARSENICITOTAL)	14.00	8	2*00
TITATE OF THE PROPERTY OF THE	MANULLE SPRING BRANCH 5.35, SAMPLED 24 AUG 70 COMPOSITE OF 0-6, 6-12 CORE FRACTION		
	4-132 4	-132A	4-133
1. 001(0.p)		0.30	55.90
	197.00 <	0.30	37,30
		0.50	29.80
14. 00000		0.20	18.60
	` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '		4

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ENGINEERING AND FNVIRDNMENTAL STUDY OF DOT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WITH A ALABAMA

## 145K4 - PRIORITY POLLUTANT/ELUTRIATE TEST DATA CONCENTRATIONS

		2220	ELUTA IA TE
	SEDIMENT	HATER	WATER
DAP CUND 1 AM E	(9/90)	185	(1/S)()
	*****		1
6. DOE(P,P)	289.00	0.10	23.00
7. TITAL DOTA	1751	8	175.00
8. MERCURY(TOTAL)	1.20	0.20	0.30
9. CADMIUM (TOTAL)	× 1.00	1.00	8°1 ×
10. COPPERITOTAL)	20,00	10.00	20*00
IL. ZINC(TOTAL)	00.094	20.00	× 10.00
12. MICKELITOTAL)	34.00	8	× 50.00
13. RERYLLIUMITOTAL)	× 1.00	10.00	0°01 ×
14. ARSENIC (TOTAL)	18.00	2.00	<b>7.</b> 00

#### H-VILLE SPRING BRANCH 5.60, SAMPLED 24 AUG 70

		1-4 -131 4-1	60	‡	4-139
3.	01(0.0)	> 10.0	< 0.0R	į	0.18
2.2	(0,0)	0.20	80.0		0.20
3.	00(0,0)	0.03 <	90.0	<b>~</b>	0.08
4	( 4, 9)00	> 80.0	90.0	<b>~</b>	0.08
3	06(0,0)		0.04		80
9	( a* a) 30		800		8
7. 10	TOTAL DOTR		0.20		0.57
	ERCURY (TOTAL)		0.20		3
75	ADMIUM (TOTAL)	7 00-1	1.00	~	8
_	COPPER( TOTAL)	1 > 00 '9's	00.00		20.00
_	INC(TOTAL)		00.0		20.00
Z	ICKEL( TOTAL)		00.0		8
_	ERVLLIUM(TOTAL)		00.00		30.8
14: A	ARSENIC (TOTAL)		3.00		59.00

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FOOTHOTES: VALUES LESS THAN DETECTION LIMITS ARE ESTIMATED TO BE ONE-HALF THE DETECTION LIMIT WHEN TOTAL DOTR IS CALCULATED.

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELEN NESERVOIR, ALABAMA

145K4 - PRIGRITY POLLUTANIZELUTRIATE TEST DATA CONCENTRATIONS	INDUNT OF FILTERABLE RESIDUE FINER THAN GLASS FIBER (1.2 MICRON) BUT RETAINED ON A 0.45 MICRON FILTER
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ENGINEERING AND ENVIRONMENTAL STUDY
OF DDT CONTAMINATION OF HUNTSVILLE
SPRING BRANCH, INDIAN CREEK, AND
ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

TASK 5

AQUATIC BIOTRANSPORT (EXCLUDING VERTEBRATES)

Tennessee Valley Authority Office of Natural Resources

August 1980

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#### PREFACE

This document was prepared in support of the Envineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

# TASK 5 AQUATIC BIOTRANSPORT (EXCLUDING VERTEBRATES)

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#### WORKTASK DESCRIPTION

# I. Purpose

The purpose of the task is to define the body burden levels of DDTR (i.e., DDT isomers and metabolites) in nonvertebrate aquatic organisms occurring in Huntsville Spring Branch (HSB), Indian Creek (IC), and adjoining regions of Wheeler and Guntersville Reservoirs. In addition, the task documents the spatial distribution of these organisms as it relates to any remedial measures.

#### II. Scope

- A. Three sampling efforts were conducted: once immediately following a large rainfall event in late summer, once during the late summer/early fall season, and once during the late fall/early winter season.
- B. Indian Creek and Huntsville Spring Branch were sampled at various locations up to ICM 7.0 and HSBM 5.9, respectively. The Tennessee River was sampled from TRM 359.0 in Guntersville Reservoir downstream to TRM 289.9 in Wheeler Reservoir. Flint River (FRM 22.7), Elk River (ERM 20.7), Limestone Creek (LCM 18.0) and Barren Fork Creek (BFCM 1.2) were sampled as tributary stations (See Appendix). Not all stations were sampled during each field effort.
- C. The types of samples collected included:
  - Biological samples for concentration of DDTR and organism identification/enumeration including:

- a. Phytoplankton
- b. Zooplankton
- c. Benthos
- d. Aufwuchs, and
- e. Herbaceous aquatic vascular plant communities.
- Whole water for DDTR, nutrients, and selected metals analysis,
   as well as in situ water quality parameters.
- 3. Sediment for DDTR analysis.

Not all types of samples were collected during each of the three field efforts (See Table 5-1).

# III. Sample Collection and Handling

#### A. Biological

# 1. Phytoplankton

Phytoplankton/inorganic particle samples were collected at half-meter intervals as grab samples from the euphotic zone.

Two 4-L samples were made at each station by compositing three replicate grab samples each. These samples were placed in glass containers cleaned for DDTR analysis, capped with lids lined with aluminum foil, and iced to 4°C during transport to the laboratory. Samples for DDTR analysis were labeled with identifying number, location, and date, and were accompanied by detailed field notes describing actual sampling locations cross-referenced to sample numbers.

Samples for phytoplankton identification and enumeration were collected, preserved with an appropriate fixative, and labeled for biological analysis.

Table 5-1. Summary of Samples Collected for Task 5

		Field Effort	T. 4. 10.11/
Sample Type	Rainfall Survey	Late Summer/Early Fall	Early Winter
Phytoplankton	ICM 0.0, 4.0	HSBM 0.0, 1.3, 2.4, 5.37, 5.9 ICM 0.0, 4.0 TRM 289.9, 315.0, 345.2, 350.0 BFCM 1.2	No Samples Collected
Zooplankton	ICM 0.0, 4.0	HSBM 0.0, 1.3, 2.4, 5.37, 5.9 ICM 0.0, 4.0 TRM 289.9, 315.0, 345.0, 350.0 BFCM 1.2	HSBM 2.4, 5.9 ICM 0.8, 4.6
Benthic Macroinvertebrates	No Samples Collected	HSBM 0.0, 1.3, 2.4, 4.3, 5.37, 5.4, 5.9 ICM 0.0, 4.0 TRM 289.9, 315.0, 345.3, 350.0 BFCM 1.2 ERM 20.7 FRM 22.7 LCM 18.0	HSBM 2.4, 5.9 ICM 0.8, 4.6
Aufwuchs	No Samples Collected	HSBM 0.0, 1.3, 2.4, 5.37, 5.9 ICM 0.0, 4.0 TRM 289.9, 315.0, 345.2, 350.0 BFCM 1.2	No Samples Collected
Aquatic Vascular Plants	No Samples Collected	HSBM 2.5, 4.5, 5.6 ICM 4.2, 6.7, 7.0 TRM 293.0 LOB, 305.1 ROB, 328.5 LOB, 359.0 (ROB)	No Samples Collected
Whole Water DDTR	No Samples Collected	TRM 345.0 FRM 22.7 LCM 18.0	No Samples Collected

Table 5-1. Summary of Samples Collected for Task 5 (Continued)

	<b>L.</b>	Field Effort	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Sample Type	Rainfall Survey	Late Summer/Early Fall	Late Fall/ Early Winter
Nutrients, Metals	ICM 0.0, 4.0	HSBM 0.0, 5.37, 5.9 ICM 0.0, 4.0 TRM 289.9, 315.0, 345.2, 350.0 BFCM 1.2 ERM 20.7 FRM 22.7 LCM 18.0	No Samples Collected
<u>in situ</u> Water Quality	No Samples Collected	HSBM 0.0, 1.3, 2.4, 5.37, 5.9 ICM 0.0, 4.0 TRM 289.0, 315.0, 345.2, 350.0 BFCM 1.2	No Samples Collected

Sediment DDTR

No Samples Collected

FRM 22.7 LCM 18.0

No Samples Collected

#### 2. Zooplankton

Zooplankton was collected for the rainfall event and the late summer/early fall sampling periods by 5-minute horizontal tows using a 0.5-m aperture plankton net with 80  $\mu$  mesh. During the late fall/early winter sampling period, zooplankton was collected by pumping water through an 80-micron mesh net for 10 minutes since the low water levels prevented net towing. Zooplankton which was collected for each of the DDTR analyses was placed in a glass container cleaned for DDTR analysis and sealed with a lid lined with aluminum foil. One gram of zooplarkton would have been optimum, but because of the small sample weights of zooplankton at certain locations it was sometimes necessary to make a composite to obtain a large enough sample for analysis. Table 5-2 lists the samples that were composited. The samples were placed on ice and kept at 4°C during transport to the laboratory. Sample bottles were labeled with identifying number, location, and date and were accompanied by detailed field notes describing actual sampling locations cross-referenced to sample numbers.

The zooplankton samples were prepared by filtering the entire zooplankton sample through a pre-weighed glass fiber filter, retaining the filtrate. The filters were air dried to constant weight, recombined with the retained filtrate, and blended using a polytron blender for two minutes. The volume of the sample was determined and the sample analyzed for DDTR. The results of the analyses are reported as µg DDTR/g zooplankton.

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Table 5-2. Zooplankton Samples Composited for DDT Analysis

Sample #	Location	Number of Individual Samples Composited
DDT 5-48C	TRM 289.9 (ROB)	3
DDT 5-51C	TRM 289.9 (MID)	3
DDT 5-54C	TRM 289.9 (LOB)	3
DDT 5-57C	TRM 315.0 (ROB)	3
DDT 5-60C	TRM 315.0 (MID)	3
DDT 5-63C	TRM 315.0 (LOB)	3
DDT 5-66C	TRM 345.2 (LOB)	3
DDT 5-69C	TRM 345.2 (MID)	3
DDT 5-75C	TRM 350.0 (LOB)	3
DDT 5-78C	TRM 350.0 (MID)	3
DDT 5-81C	TRM 350.0 (ROB)	3
DDT 5-87C	HSB 1.3	2
DDT 5-90C	HSB 2.4	2
DDT 5-94C	HSB 5.37	2
DDT 5-96C	HSB 5.9	3
DDT 5-13C	ICM 0.0	5
DDT 5-11C	ICM 4.0	2
DDT 5-103C	ICM 4.0	3
DDT 5-105C	BFC 1.2	

TRM = Tennessee River Mile

HSB = Huntsville Spring Branch

IC = Indian Creek

BFC = Barren Fork Creek

MID = Midstream

LOB = Left overbank

ROB = Right overbank

#### Zooplankton

Zooplankton was collected for the rainfall event and the late summer/early fall sampling periods by 5-minute horizontal tows using a 0.5-m aperture plankton net with 80  $\mu$  mesh. During the late fall/early winter sampling period, zooplankton was collected by pumping water through an 80-micron mesh net for 10 minutes since the low water levels prevented net towing. Zooplankton which was collected for each of the DDTR analyses was placed in a glass container cleaned for DDTR analysis and sealed with a lid lined with aluminum foil. One gram of zooplankton would have been optimum, but because of the small sample weights of zooplankton at certain locations it was sometimes necessary to make a composite to obtain a large enough sample for analysis. Table 5-2 lists the samples that were composited. The samples were placed on ice and kept at 4°C during transport to the laboratory. Sample bottles were labeled with identifying number, location, and date and were accompanied by detailed field notes describing actual sampling locations cross-referenced to sample numbers.

The zooplankton samples were prepared by filtering the entire zooplankton sample through a pre-weighed glass fiber filter, retaining the filtrate. The filters were air dried to constant weight, recombined with the retained filtrate, and blended using a polytron blender for two minutes. The volume of the sample was determined and the sample analyzed for DDTR. The results of the analyses are reported as µg DDTR/g zooplankton.

Table 5-2. Zooplankton Samples Composited for DDT Analysis

Sample #	Location	Number of Individual Samples Composited
DDT 5-48C	TRM 289.9 (ROB)	3
DDT 5-51C	TRM 289.9 (MID)	3
DDT 5-54C	TRM 289.9 (LOB)	3
DDT 5-57C	TRM 315.0 (ROB)	3
DDT 5-60C	TRM 315.0 (MID)	3
DDT 5-63C	TRM 315.0 (LOB)	3
DDT 5-66C	TRM 345.2 (LOB)	3
DDT 5-69C	TRM 345.2 (MID)	3
DDT 5-75C	TRM 350.0 (LOB)	3
DDT 5-78C	TRM 350.0 (MID)	3
DDT 5-81C	TRM 350.0 (ROB)	3
DDT 5-87C	HSB 1.3	2
DDT 5-90C	HSB 2.4	2
DDT 5-94C	HSB 5.37	2
DDT 5-96C	HSB 5.9	3
DDT 5-13C	ICM 0.0	5
DDT 5-11C	ICM 4.0	2
DDT 5-103C	1CM 4.0	3
DDT 5-105C	BFC 1.2	

TRM = Tennessee River Mile

HSB = Huntsville Spring Branch

IC = Indian Creek

BFC = Barren Fork Creek

MID = Midstream

LOB = Left overbank

ROB = Right overbank

Samples collected for zooplankton identification and enumeration were preserved with an appropriate fixative and labeled for biological analysis. During the late fall/early winter sampling period triplicate samples for percent composition analysis of were also collected.

#### 3. Benthos

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Benthic macroinvertebrates were collected by a grab sampler with the exception that a Needham scraper was used to collect organisms at FRM 22.7 and LCM 18.0 because of the rock and gravel substrate. Triplicate samples (from right and left overbanks and mid-channel) were composited in the field; two composite samples were made at each station. However, for TRM 350.0, 345.2, 2,315.0, and 289.9 the samples were not composited and were analyzed individually. Samples for DDTR analysis were collected in glass containers cleaned for DDTR analysis, sealed with lids lined with aluminum foil, and transported to the laboratory on ice. The samples were frozen in the laboratory until processed.

Benthic macroinvertebrate samples were prepared by filtering the sample through a tared 63 µm sieve, retaining the filtrate. The sieve was reweighed and the total weight of filtered material determined. Sieve contents were washed back into the retained filtrate and the sample was blended for two minutes. The volume of the sample was determined and analyzed for DDTR. The results of the DDTR analysis are reported in µg DDTR/g.

#### 4. Aufwuchs

The aufwuchs community was sampled using both Hester-Dendy macroinvertebrate samplers and Plexiglas periphyton samplers. Hester-Dendy samplers were suspended in the upper portion of the euphotic zone at each station for a four-week incubation period. Indian Creek and Huntsville Spring Branch were sampled in triplicate at each station. Tennessee River sites had five samplers at each point (ROB, MC, LOB) across a transect at each station. No Hester-Dendy samplers were placed at midchannel sites at TRM 315.0, 345.2, and 350.0 because of river traffic. The Plexiglas samplers were placed and incubated for two weeks, but a decision was made not to use these samples because of the possibility of DDT adsorption on the Plexiglas slides. All Plexiglas slides, however, were frozen for possible future use.

Appropriate aufwuchs sample collection techniques were used to minimize organism loss during collection and biasing of subsequent DDTR analysis. The samplers were placed in plastic bags and transported on ice to the laboratory. At least 25g and preferably 50g of organisms were removed from each sampler for DDTR analysis. The organism samples to be analyzed for DDTR were placed in specially cleaned glass bottles, and sealed with caps lined with aluminum foil.

The samplers used to collect samples for identification and enumeration analysis were placed in individual plastic bags, labeled, and preserved with formalin.

# 5. Herbaceous Aquatic Vascular Plants

Herbaceous vascular plants were collected by identifying the dominant genera and gathering sufficient quantities of the representatives to perform analyses. Whole plant collection was routinely performed, but storage and/or reproductive structures such as seeds and tubers were collected when available and submitted for separate analysis. After collection and prior to processing, the plants were washed to remove sediments, taking care not to dislodge organisms which would normally be consumed by grazing organisms along with the plant structures. At least 50 g of material was collected for DDTR analysis.

#### B. Whole Water

Whole water (i.e., unfiltered) samples were collected by field compositing samples gathered at half-meter intervals starting at 50 cm below the water surface and ending near the bottom. A four-liter composite sample was placed in a glass container washed for pesticide analysis, sealed with a cap lined with aluminum foil, and transported to the laboratory on ice for DDTR analysis.

Water samples for nutrients  $(NO_2-NO_3, NH_3, and PO_4)$  and selected metals (Ca and Mg) analyses were collected and preserved using the currently accepted and approved regulatory agency methodologies. Samples were taken at half-meter intervals top to bottom and composited.

<sup>1.</sup> See Quality Assurance Document for reference.

In situ water quality parameters (pH, DO, conductivity, and temperature) were determined potentiometrically with a calibrated and documented instrument at half-meter intervals from 50 cm below the surface to the bottom. Alkalinity was determined in the field using the currently accepted and approved regulatory agency methodology on samples composited by collecting at half-meter intervals from 50 cm below the surface to the bottom.

#### C. Sediment

Sediments for DDTR analysis were collected with an Ekman dredge, placed in glass containers cleaned for DDTR analysis, sealed with caps lined with aluminum foil and transported on ice to the laboratory. Multiple grab samples were collected at ROB and LOB locations and composited to yield sufficient sample for analysis.

# IV. Sample Analysis

# A. Biological

#### 1. DDTR Analysis

All biological samples collected for DDTR analyses were analyzed using currently accepted and approved regulatory agency methodology.  $^{2}$ 

DDTR levels in the phytoplankton/inorganic particle fraction were calculated after analysis of the total DDTR in one four-liter sample and an analysis of the filtrate from the second four-liter sample.

<sup>1.</sup> See Quality Assurance Document for reference.

<sup>2.</sup> Ibid.

#### 2. Identification/Enumeration

Approximately 150 samples were analyzed for kinds and numbers of organisms present. These data are reported to the lowest identifiable taxon.

#### B. Whole Water

#### 1. DDTR Analysis

All water samples for DDTR analysis were analyzed using currently accepted and approved regulatory agency methodology. 1

# 2. Nutrient and Metal Analysis

All water samples for nutrient and metal determination were analyzed using currently accepted and approved regulatory agency methodology. <sup>2</sup>

#### C. Sediment

All sediment samples were analyzed for DDTR using currently accepted and approved regulatory agency methodology.<sup>3</sup>

#### V. Data Handling and Reporting

# A. Biological

#### 1. DDTR Analysis

All data is summarized in tabular form. Each of six forms of DDT and total residue concentration are shown along with detection limits and precision and accuracy data for each procedure.

#### 2. Identification and Enumeration

Results of biological analysis for identification and enumeration are tabulated by appropriate classification group.

<sup>1.</sup> See Quality Assurance Document for reference.

<sup>2.</sup> Ibid.

<sup>3.</sup> Ibid

#### B. Whole Water

# 1. DDTR Analysis

Results of chemical analyses for DDTR are summarized in tabular form. Each of six forms of DDT and total residue concentration are shown along with detection limits and precision and accuracy data for each procedure.

# 2. Nutrient and Metal Analysis

Nutrient concentrations and metals are summarized in tabular form along with field measurements of  $\underline{\text{in }}$   $\underline{\text{situ}}$  water quality parameters.

#### C. Sediment

Results of chemical analyses for DDTR are summarized in tabular form. Each of six forms of DDT and total residue concentration are shown along with detection limits and precision and accuracy data for each procedure.

#### D. Data Reporting

The data are compiled into the attached report which includes data summaries and a brief assessment of the data with noting of values which appear to be outside normal ranges.

#### BATA SUMMARY

The data are summarized by field effort, and within this category by sample type.

#### 1. Sampling After A Large Rainfall Event

#### A. Phytoplankton/Inorganic

1. Stations Sampled
ICM 0.0; ICM 4.0.

#### 2. Number of Samples Collected

Duplicate samples were collected for DDTR analyses as well as for identification.

# 3. Number of Analyses Performed

Although four samples were collected for DDTR analyses there was sufficient sample volume in each to permit three DDTR analyses per station to be run. This resulted in six total DDTR analyses and six dissolved DDTR analyses (see Table 5-3). There were two identifications performed at each station.

#### 4. Taxonomic and Water Quality Data

Chemical water quality data for the rainfall survey is summarized in Table 5-3.

The phytoplankton assemblages at the two stations were numerically dominated by the same taxa (Merismopedia sp. and Melosira sp.). However, there were 57 taxa at ICM 0.0 and 46 taxa at ICM 4.0. One more chrysophyte taxon occurred at ICM 4.0 than at ICM 0.0 (the stations had seven chrysophytes in common). There were eight fewer

chlorophyte taxa and four fewer cyanophyte taxa at ICM 4.0 than at ICM 0.0. (See Tables 5-4A and 5-4B).

# B. Zooplankton

1. Stations Sampled
ICM 0.0, ICM 4.0.

# 2. Number of Samples Collected

Duplicate samples were collected for DDTR analyses as well as for identification.

# 3. Number of Analyses Performed

Because of a sample size constraint, duplicate zooplankton samples were composited for each station, resulting in two DDTR analyses (see Table 5-3).

# 4. Taxonomic Data

The zooplankton assemblages for the two stations were both rotifer-dominated (<u>Brachionus caudatus</u> at ICM 4.0 and <u>B</u>. <u>calyciflorus</u> at ICM 0.0). There were two fewer rotifer taxa, four fewer cladoceran taxa and one less copepod taxon at ICM 4.0 than at ICM 0.0. The two stations had 22 rotifer taxa (out of 40), one cladoceran taxon (out of five), and three copepod taxa (out of four) in common. (See Tables 5-5A and 5-5B).

#### C. Benthic Macroinvertebrates

No samples were collected for DDTR analysis or identification/ enumeration.

#### D. Aufwuchs

No samples were collected for DDTR analysis or identification/ enumeration. E. Aquatic Vascular Plants

No samples were collected for DDTR analysis.

F. Whole Water and Sediments

No samples were collected for DDTR analysis.

#### II. Late Summer/Early Fall

# A. Phytoplankton/Inorganic

1. Stations Sampled

ICM 0.0; ICM 4.0; BFCM 1.2; HSBM 0.0; HSBM 1.3; HSBM 2.4; HSBM 5.37; HSBM 5.9; TRM 289.9 ROB, MC, LOB; TRM 315.0 ROB, MC, LOB; TRM 345.2 ROB, MC, LOB; TRM 350.0 ROB, MC, LOB.

2. Number of Samples Collected

Triplicate samples were collected at all stations for a total of 60 samples for DDTR and 60 for identification.

3. Number of Analyses Performed

There were 120 total DDTR analyses (60 total DDTR and 60 dissolved DDTR) completed and 60 identifications were performed (see Table 5-3).

4. Taxonomic and Water Quality Data

Laboratory determinations of water quality parameters are presented in Table 5-3; Table 5-6 details the results of the in situ and field determined water quality parameters.

The structure of the phytoplankton assemblage varied from primarily diatom-dominated communities (Melosira sp.) at

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<sup>1.</sup> ROB = right overbank.

MC = midchannel.

LOB = left overbank.

TRM 315.0 (LOB, MC), TRM 289.9 (MC, ROB), TRM 345.2 (LOB), and HSBM 5.37 to cyanophyte-dominated communities (Anacystis sp. or Merismopedia sp.) at all other stations. For individual sample analyses results see Tables 5-7A and 5-7B.

#### B. Zooplankton

# 1. Stations Sampled

HSBM 0.0, HSBM 1.3, HSBM 2.4, HSBM 5.37, HSBM 5.9, ICM 0.0, ICM 4.0, BFCM 1.2, TRM 289.9, TRM 315.0, TRM 345.2, TRM 350.0.

# 2. Number of Samples Collected

There were 60 samples collected for DDTR analyses and 60 for identifications.

# 3. Number of Analyses Performed

There were 29 total DDTR analyses made on the samples (see Table 5-3). Many samples were composited to obtain sufficient sample size for analyses. There were 39 identifications/analyses performed.

#### 4. Taxonomic Data

The species structure of the zooplankton community changed from a cladoceran-dominated (Bosmina longirostris) one at the river stations (TRM 350.0 and 345.2) and ICM 0.0 to a rotifer-dominated (Brachionus calyciflorus) one in the HSB/IC system. (See Tables 5-8A and 5-8B). The number of taxa was slightly higher in the HSB/IC system (mean, 44) than in the river (mean, 39). No identification/enumeration analysis was done on samples collected at HSBM 0.0, TRM 289.9, and TRM 315.0.

#### C. Benthic Macroinvertebrates

#### 1. Stations Sampled

ICM 0.0; ICM 4.0; BFCM 1.2; HSBM 0.0; HSBM 1.3; HSBM 2.4; HSBM 4.3; HSBM 5.37; HSBM 5.4; HSBM 5.9; TRM 289.9; TRM 315.0 LOB, MC, ROB; TRM 345.3 LOB, MC, ROB; TRM 350.0 LOB, MC, ROB; ERM 20.7, FRM 22.7, LCM 18.0.

#### 2. Number of Samples Collected

Several stations yielded insufficient organisms for DDTR analyses; these were ICM 0.0, ICM 4.0, HSBM 1.3, HSBM 2.4, HSBM 5.4, and HSBM 5.9. Samples from 15 of the stations were collected in duplicate before the workplan was finalized specifying triplicate samples. Consequently, only 33 composite samples were collected for DDTR analyses. One hundred seventy one samples were collected for identification.

# 3. Number of Analyses Performed

All 33 composites for DDTR were analyzed and reported (see Table 5-3). Identifications and enumerations were performed on 108 samples.

#### 4. Taxonomic Data

The benthic macroinvertebrate populations varied from a Chironomidae/Tubificidae/Hexagenia community structure in the reservoir stations (TRM 350 and 345.3) to an Oligochaeta (Tubificidae)/Chironomidae community structure in the more organically enriched Huntsville Spring Branch/Indian Creek system (see Table 5-9). Gastropods and molluscs (with the exception of Sphaerium sp.) were generally not found in the HSB/IC system. Conversely, the odonates Libellulidae

and Macromiidae, and the isopod, Asellus sp., were only found in the HSB/IC system. Coleopterans were found only in one tributary station, ERM 20.7, and megalopterans were found only at TRM 350.0 LOB.

#### D. Aufwuchs

Although the plant and animal portions of the aufwuchs were sampled, only the animal samples were analyzed.

# 1. Stations Sampled

1CM 0.0; ICM 4.0; BFCM 1.2; HSBM 0.0; HSBM 1.3; HSBM 2.4; HSBM 5.37; HSBM 5.9; TRM 289.9 LOB, MC, ROB; TRM 315.0 LOB, ROB; TRM 345.2 LOB, ROB; TRM 350.0 LOB, ROB.

# 2. Number of Samples Collected

Although 69 samplers were placed, vandalism or natural phenomena caused the loss of samplers at some stations. There were 32 Hester-Dendy traps recovered for DDTR analyses and 12 recovered for identification and enumeration.

#### 3. Number of Analyses Performed

DDTR analyses were performed on 32 samples (see Table 5-3). Identifications were done on eight of the Hester-Dendy samplers.

#### 4. Taxonomic Data

The community data from the Hester-Dendy traps shows a shift in structure from a trichopteran-dominated structure in the river (TRM 350.0 and 345.2) to a chironomid dominated one in the HSB/IC system (see Table 5-10). Hydropsychids, planarians, and amphipods were found in the Tennessee River but not in the HSB/IC system. Conversely, odonates and

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molluscs were found on the samplers from the HSB/IC system but not from those in the Tennessee River.

#### E. Aquatic Vascular Plants

#### 1. Stations and Species Sampled

Samples of two aquatic plant species, buttonbush (Cephalanthus occidentalis L.) and halberd-leaved marsh mallow (Hibiscus militaris Cav.) were collected from the following localities:

TRM 293.0 (LOB), TRM 305.1 (ROB), TRM 328.5 (LOB), TRM 359.0 (ROB), 1CM 4.2, ICM 6.7, ICM 7.0, HSBM 2.5, HSBM 4.5. Button-bush samples also were collected at HSBM 5.6. Duckweed, consisting of a mixture of Lemna sp. and Spirodela polyrrhiza (L.) Schield., was collected from along Huntsville Spring Branch at HSBM 4.5 and HSBM 5.6. Samples of Hibiscus and Cephalanthus consisted of seeds, fruits, and stems and leaves from the upper portion of the plant. In the case of duckweed, the entire plant was collected for analysis.

With the exception of the collection of duckweed from HSBM 4.5 and collections of <u>Hibiscus</u> and <u>Cephalanthus</u> from ICM 2.5, three replicates of each species were collected at sampling localities. Only two replicates of duckweed were collected at HSBM 4.5 due to the paucity of plants at this station.

Buttonbush and halberd-leaved marsh mallow were selected because of their common and widespread occurrence along Indian Creek, Huntsville Spring Branch, and mainstream reservoirs of the Tennessee River. Halberd-leaved marsh mallow is an herbaceous, emergent species typically found along the margins of streams, rivers, embayments, and overbank areas of reservoirs, while buttonbush is a woody shrub commonly found in shallow water in similar habitats to those described for Hibiscus. Both species frequently grow on mud flats that are inundated during the early portion of the growing season. Habitats from which the two species mentioned above were collected include stream and reservoir margins, the shallow water of beaver ponds, and margins of embayments. Duckweed, a small floating herbaceous plant that frequently covers the water surface in sloughs and backwater areas with restricted flow, was collected from the still water of beaver ponds along Huntsville Spring Branch. The upper and lower portions of Indian Creek embayment were searched for duckweed but no colonies were found in these areas at the time of collection.

The samples of <u>Hibiscus</u> and <u>Cephalanthus</u> were not washed prior to sample shipment. While the lower portions of these plants are frequently covered with sediments deposited during times of high water (i.e., spring and early summer), the upper plant portions were not covered with excessive sediments. However, some adherance of soil particulates to the upper portions of these plants undoubtly occurred as a result of fluctuations in water levels and other phenomena. The relatively small amount of sediment on the collected plant structures would most likely be ingested by feeding herbivores. The collections of

duckweed were field washed by gently 'sloshing' the plants in their surrounding water medium. This removed the major portion of floating organic debris commonly associated with duckweed colonies. Due to the small size of duckweeds and associated organic debris, some non-living organic material was inadvertently included in the duckweed samples.

2. Number of Samples Collected/Number of Analyses Performed

A total of 62 samples were collected and DDT residue analyses
performed on 31 samples of Cephalanthus, 26 samples of Hibiscus,
and 5 samples of duckweek. One sample of Cephalanthus collected at HSBM 4.5 was lost during lab preparation (see Table 5-3).

#### F. Whole Water and Sediment

Whole water and sediment samples were collected from two tributary stations above the influence of Wheeler Reservoir.

Stations Sampled
 LCM 18.0 ROB, LOB; FRM 22.7 ROB, LOB.

2. Number of Samples Collected

One whole water sample and two sediment samples were collected at each station resulting in two whole water samples and four sediment samples for DDTR analyses.

3. Number of Analyses Performed

Two whole water DDTR analyses and four sediment analyses were performed (see Table 5-3).

#### III. Late Fall/Early Winter

A. Phytoplankton/Inorganic

No samples were collected for DDTR analysis or identification/ enumeration.

#### B. Zooplankton

# 1. Stations Sampled

ICM 0.8; ICM 4.6; HSBM 2.4; HSBM 5.9.

#### 2. Number of Samples Collected

Triplicate samples were collected at all stations for a total of 12 samples for DDTR analyses and 12 samples for determining percentage zooplankton, percentage other organics, and percentage inorganic particles.

#### 3. Number of Analyses Performed

There were six DDTR analyses performed, some replicate samples had to be combined to yield sufficient sample volume for analysis (see Table 5-3). There were 14 particle percentage determinations made with one sample analyzed at three different dilution volumes (see Table 5-11).

#### 4. Taxonomic Data

No samples were analyzed for species composition/enumeration.

#### C. Benthic Macroinvertebrates

# 1. Stations Sampled

ICM 0.8; ICM 4.6; HSBM 2.4; HSBM 5.9.

#### 2. Number of Samples Collected

Triplicate samples were collected for DDTR analyses at each station. Six dredge hauls were taken at each of three locations (25, 50, and 75 percent) on a horizontal transect at each station. The six dredge hauls at each percentage point were composited to yield three samples per river mile.

#### 3. Number of Analyses Performed

Each composite sample was analyzed for DDTR, yielding 12 DDTR data points (see Table 5~3).

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# 4. Taxonomic Data

The benthic macroinvertebrate samples were not subjected to identification/enumeration analysis.

# D. Aufwuchs

No aufwuchs samples were taken for DDTR analysys or identification/enumeration.

# E. Aquatic Vascular Plants

No macrophyte samples were taken for DDTR analysis.

# F. Whole Water and Sediments

No samples were collected for DDTR analysis.

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Table 5-3

SUMMARY OF CHEMICAL DATA FOR TASK 5

A Proposition of the

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING GRANCH, INVIAN CREEK, AND ADJACENT LANDS AND NATERS MHELER RESERVOIR, ALABAMA

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				TASK5 -	TASKS - ADUATIC BIUTKANSPORT (EXCLUDING VERT	NS PORT (	FXC LUD I	IG VERTER	EBRATESI					
		HJRI ZINTA			SAMPLE	WE I GHT	TETAL CON	TOTAL CONCENTRATIONS OF DUT-0,P CO1-0,			DT IN AQUATIC OF		TOTAL MIN	UDTR
5 1 10 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	41 LE	L0CA 71)	GN DATE	LARIO	TYPE -SPECIES	(1 3 3	(36/6)	(9/90)	3/3/2	(3/30)	(9/90)	(9/9)	(3/35)	(9/90)
HARRY WARREN	0,71		240K 130	5-187	AUFAUCHS		100.0	100	410.0	00	410-0	4000	40.0	3.047
9	370		210047	9-196	AUFRUCHS	14.00		0,00	0	2	050	0.081	0.35¢	3.35
2	000		2400179	9 5-189	A UFWUCHS	26.2	0.056	1.570	1.570	2.220	0.130	1.600	7.7.0	7.746
M-VILLE SPHING BR	000		2400179	9 5-190	AUFWUCHS	14.1	0.00	0.450	19	2.620	6.5	1.130	0.330	6.330
SPRING	.30		24UC 17		AUFHUCHS	8.100	6.050	20.100	4.8	12.400	1.740	3.720	49.450	49.450
M-Ville SPRING BR	2.40		240C 179		AUFRICAS	16.3	0.430	16-600	3.200	2000	3 6	2.70	34.970	34.970
-VILLE SPRING			81.044	3-194	ALIFALICAS	9-4-6		23.62	2	200	200			505
SPR ING	5.37		2400179		AUFHUCHS	0	900.0	0000	000	0.017	0.010	0000	0.052	2,005
2 m 2	5.40		240017		AUFWUCHS	14.2	0.007	0.0	0.016	1.0.0	0.031	0.016	0.121	1710
عد ون	5.90		2400179		A UPP UCHS	23.5	*00*0	0.060	0.020	0.0	0.0	0.020	0.174	2.17
TADIAN CAPPA			24.C. 73.		AUTHORN	<u>ء</u> ۾	600		9.0		900		1.190	66.
SADIAN CRESK	200		2400179	5-195	AUFILICAS	28.7		8 200	0.92	1.10	0.330	0-840	3.939	200
	00.		ST 2047		AUFINCHS	14.0	0.02	0.110	996	0.620	0.130	0.210	1551	1.451
<b>~</b>	289.90		2400174		AUPPICHS	17.6	0.003	0.010	71000	0.029	9000	0.015	20.0	0.015
CMESSEE ALVEA	05. 682		24II 179		AUFAUCHS	9.000	0.011	0-110	0.024	0.040	0.014	0.0	\$ .0	7.544
	00.00		2.00.17		ACFAUCES	6. 9. s	86	0.032	900	9200	900	410.0	100	0
1 NE	315.00		240C 179	081-5	AUFAUCHS	24.0		900	0000	0-00-0		100-0		
RI VER	315.00	<u>.</u>	•		AUFWUCHS	27.6	0.00	0.00	0.0	0.087	0.203	0.160	0,533	C.533
4 X	315.00	<u>.</u>		ų,	AUFNUCHS	\$0.5	0.003	90000	0.025	0.049	0.019	0.074	0.176	5.176
¥	315.00	RT. EA		9 5-218	AUFHUCHS	34.5	9000	90000	0.0	0.076	0.041	0.160	0.340	340
•	315.00		MACADAL MA		AUFAUCHS	35.4	0.00	0.003	2 C	0.033	0.015	0.700	0.771	177.0
, a	345.20		9AM 100V79	127-5 6	A UFAUCES	, ,	0.00	2000		9 9		10000		
4 ] VE 4	345.20	-		'n	AUFAUC 45	32.8	9000	600	000	0.002	9000	0000	0.037	037
AJ VER	345 020	÷		•	AUFWUCHS	27.6	9000	60000	100.0	0.003	0.00	90000	0.029	0.00
41×14	920-00		2400 179	191-5 6	AUFHUCHS	11.3		< 0.003	0.00	0.007	0.002	0.004	9100	3.022
7	350,00		٧.	•	MUFAUCHS	7.380	\$ 00°0 ×	0.005	0000	0.0 L4	0.005	0.010	14000	0 4 0 ·
1 A C S	30.06	::	DAME INCOME	9-77-6 6	AUFRUCHS	5 5	900	9000	5000	0000	00°0 ×	\$000	0.0	030
, a	00.05	-	• -		AUFAUCHS	7.700		50000	500.0	0.00	00.0	000	0.02	7.00
* IVE	350.00	-	-		AUPAUCHS	9.58	*00.0	100.0	0.003	0.003	< 0.002	0.003	0.000	019
	-		00 0 00					8	4	9				Š
2			1000		1000	•			0000	2.5	0010		90.	99000
ELK ALVER	22.70		1600.179	9-119	BENTHOS	15.8	2,00	010	2000		0.050		2000	710
	20.10		1 800 17		BENTHOS	21.3	0.002	0000	100.0	0.001	0.002	0-001	0.011	210
	22.70		4.500.174		PENTHOS	30.5	0.005	0.033	10000	0.007	0.002	0.012	0.000	000:
	22.70		2500.17		HENTHUS	48.1	•	•	•	•	•	•	•	
× , ,	22.10		2500176		9 E VT HOS	4100	0°00	0.014	0.002	0.006	0.002	010.0	0.037	.037
SPRI %	64	\$	1506 C 75	1 -1-13		0.000	× 1.000	086. 4	R 6. 2	8	3.050	9.140	28.540	046
M-VILLE SPRING SR	2.40	<u>۲</u>	15CEC 74	E1-15-5	BENTHOS	0.100	3.180	36.4	4.410	87.78	4.260	0000	55.+30	3640
	0 0 7	2	1505074	> 10 cl		92.	38.700	280	969.90	2 8	25.50	000	. 907 .	200
S P K I W.C.			30406			•	0.00		0 0 0		200	0000	200	200
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TOUINERING AND ENVIRONMENTAL STUDY OF OUT CONTAMINATION HUNTSVILLE SERING BAREN INDIAN GREEKE PESSENDIAGENT LANDS AND MATERS ANABAMA

# TAS# - ACUATIC RITTRANSPORT (EXCLUDING VERTERRATES)

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S 14: 4*	: :: ::	LOCATION	DATE	J 6 4 7	TYPE -SPECIES	5	(5/9/1)	106/6)	(5/90)	(3/3/2)	(3/3/3	9/9/	_	(5/55)
						•	•	; ;		; ;				
WE WILL SELLING BA			A.3. 174	:-111	BENTACIS	2.100	7.730	3571	901.06	1+86	86.900		5577.13	5577.13
9	F.34		2 3	5-114	5	5.18	29.00	82	OK 7. 0	8	5.710		389. %C	389.540
S. 7.	5.37		366170	5-113	BENTEUS	2.705	127	1590	55.600	557	36.900	94.500	<165	4162
71.6.	3.6	۲)	100507	5.00	3 t 1 1 - 1 5	33.1	00001 >	1.00%	1.480	4.527	0.00	1.3.0	5.010	10.01
211	3.	۲,	10000	5 × .	ge 47 was	37:	004.0 >	< 0.589	0.200	9	0.130	0.220	0.190	1.890
ŝ	ر د د	t	£209047	\$7-05	5 5 VT HOS	000	< 2.000	< 2.005	005°0 >	0.670	00000	00000	0.00	5.570
173 - O - F 1371	<u>د</u> .		2980579	5-005	56-VT HOS	27.5	0.180	< 0.1co >	937.4	7.540	1.930	3.450	17.530	17.630
170157 741071	ر د ن		29A3579	\$-00 <b>\$</b>	BENTHOS	25.45	0.300	80	6.550	14.200	2.860	7.150	31.140	31.140
INDIAN CALL	•	2.5	16 CE C 79	9	SOMINES	301.7	020.0	0.9.0 >	13 46 00	4.000	2.140	18.400	3	0
INCIAN CHAPA	ن • • •	Ç,	160c L 74	12-46	9EM 05	1.700	000.6 >	<11,050	51.100	111	00 90 QK	000	255.300	275.300
INCIAN CALER	0	75	1604 C.7	\$4-25	BENTHCS	87.0	4.110	× 3.000	30.700	53,700	10.600	22,900	162.010	165.010
ANCHA CARER	2	\$2	15050 14	<u>0.7</u> <b>-</b> 50	FENTHUS	1.100	008.0 >	0.370	2.440	11.000	2.370	3.120	20.300	21.10
INDIAN CASES	9.0	<b>3</b> 0	150EC 79		BENTH'S	1001	19.900	15.600		316	39.500	166	708.000	706.000
¥ ? ;	7.00	3	1901051	r	9E4TH05	1.00	5.630	0u0.0 >	-	143	31.100	67.200	374.230	335.230
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	30.61		230,0179	5-168	BENTHOS	47	700.0	0.014		0000	00.0	0.010	3	0.00
¥2.5.5	18.00		230013	691-5	554T#28	¥.	0000	0.031		0.007	0.003	910.0	0.064	0.0
	00.00		650 P34	5+0+2	at Mros	43.2	0.003	0.002		0.011	C.005	0.010	0.035	0.035
* 1 *	20			2-049	SCHING	35.2	900.0	0.014		9.079	0.024	0.065	0.223	0.223
***** 14553 <b>*</b>			٧.	37	FENTHUS	35.6	0.002	00.0		10000	0.005	90000	0.038	0.036
FWE 555: 1 VE	15.00	٠,	~	おううしい	SULL PINCS	33.4	0.011	0.012		0.000	0.007	0.015	C.057	450.0
	315,00	4. 34. X		2-03	S G M 1 G S	11.6	0.026	0.026	0.1.0	0.280	S.C.3	0.220	6.787	1 54.0
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× 1 × 1	2			30-0	SEVENCS	5. 11	0.003	\$0000	0	0.001	400.0	*00*0	07000	0.020
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71.	2	7	-	2	55%T MOS	36.3	0.022	0.021	× 0.001	0.003	41 0° 0	0.015	0.075	0.070
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* 1			1150011	200	BENIMOS		0000	0.003	0000	90000	\$00°0	4000	0.020	0.020
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100			1000	00110	٠,	•	7 7 0	0700	1000	2000	510	0400	0.235	6.635
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٠,	2			2-153	Ź.		0.002	80.0	0.031	0.016	0000	C.017	C-137	C-133
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A4. 7.7 74 10P.			1 E : 1 C T 79	751-:	COMPANIATION	•	0000	0.004	ئ <u>. ت</u> 0	\$0.0	0000	210.0	6 <b>83</b> *	0.089
,			76 1000	121-	CEMPLANTHUS	•	00.0	760.0	000	0.010	0.002	0.003	0.023	0.02
INDIAN CAREA	)/•÷		1306 170	271-5	CEPTALANTHUS		100.0	0.003	9000	0.012	0.002	*00°C	120.0	0.027

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ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING WAANCH, INCITAN CREEK, AND ADJACENT LANDS AND WATENS WHEELER RESERVOIP, ALAEAMA

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TASKS - AUJATIC BIOTRANSPORT IFXCLUCING VERTERRATES!

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			,		1175-375-163	ŝ	3	19/90	60/6	90	9	9/90		3/30
TANK CEFFE	•			671-6			7000	2000	0.004	0.00	0.007	0.003	0.020	2000
INDIAN CREEK	0			011-4	CENTRAL PARTIES	•			100		5		2000	180.0
INDIAN CREEK	2.00			5-120	CE PHALANTHUS		200.0	200			700.0	2000		77000
A. A.	93.00	LEFT		5-158	CEPH AL ANTHUS		1000	0.002	0000	700	100	100	000	10000
E RIVER	593.00	LEFT		651-9	CE PHALANTHUS	•	0.002	0.003	70000	0 003	0 0002	0.002	0.024	0.014
ENOVESSEE RIVER	293.00	E L	220CT79	9-1-6	CEPHALANTHUS		0.001	0000	0.001	0.00	100.0	0.003	0.010	01000
KI VER	305.10	-	250CT79	9-108	CEPH AL ANTHUS	•	0.001	0°00	0000	0.00	0.001	0.002	0.011	0.01
RIVER	305-10	16H1	2500179	667-9	CEPHALANTHUS	•	0.001	£00°3	0.001	0.003	10000	10000	0.010	01000
KI KR	2	_	2500179	2-700	CEPH AL ANTHUS	•	0.001	260.0	100.0	0.00	100.0	0.001	900.0	0.00
TENNESSEE HIVER 3	ç.	LEFI	2500 179	5-204	CE PHALANTHUS	•	0.001	2000	0.001	0.001	100.0	0.001	0.007	100.0
¥ 4	2		22007	<b>607-</b>	CENTAL ANTHUS		100.0	0.002	0.001	0000	0000	0000	9000	0000
* * * * * * * * * * * * * * * * * * * *				907-5	CEPHAL ANT MUS	•	0.001	2000	100.0	100.0	0.001	0.00	0.00	0.007
T ACK				017-4	CE PHALANTHUS	•	103.0	> 200° 3	100	V [00.0	0000	0000	000	20000
		٠,		117-6	CEPHAL ANTHUS	•	0.001	2000	10000	00.0	000	200.5	C 000°	0000
KI VEK 3	00.46	3	200	2-515	CEPHALANTHUS	•	0000	> 200°0	1000	v 100°0	10000	100.0	900	2.001
	5.60			5-133	DUCK WEED	•	0.002	0.00	0.005	0.013	9000	0.00	0.039	2.034
SPRING 3	5.60			5-134	DUCK # FED	•	00.00	9.0.0	0.057	0.018	0.031	010.0	0.134	9.135
SP KI NG 9	2 00		19CC 179	£-135	DUCAMEED		20000	*00	0.005	0.011	0000	0.013	0.0	9
SPRING	A,			5-148	HIBI SCUS	•	0.024	**00	0.230	0.320	0.061	0.210	969-0	*64.0
SPRING	2.50			5-146	HIBISCUS		0.018	960.0	0.1.0	0.230	0.0	0-120	0.679	0.679
-VILLE SPRI	4.50		1 600 179	5-130	HIBISCUS	•	0.011	0.028	0.032	0.00	010	0.033	0.154	120
SPATAG	•		LEOCT 79	0+1-9	Ξ	•	0.013	0.082	0.034	0.0	0.012	8	0.232	0.232
SPRING	4.50		1 60C T 79	2-141	M1615CUS	•	0.072	0. %	0.120	0.190	0.036	0.110	0.978	0.978
INDIAN CREEK	07.4		1600.179	5-153	HIBISCUS	•	0.003	3000	0.058	0.067	0.014	~•°°	C. 408	2,208
INDIAN CREEK	3,4		180CT79	5-1.54	H181 SCUS	•	0.002	0.003	0.042	0.075	600°0	6.028	C-159	1.159
TANDLAN CREEK	07.4		1600 179	2-155	<b>.</b>	•	0.002	9000	0.034	190.0	9000	0.034	0.145	2.145
TADIAN CARRA	9 6		1806.179	71-4	#1015CUS		2001	2005	0.010	0.019	600	0000	3 C	0.0
INCIDENT COLUMN			100 130	271-0	7	•	1000	300	*10.0	0.030	6000	10000	26000	.00
INDIAN CREEK	00.7		1800.179	5-:21	#1#15CUS	•	1000	200	21000	6000			1100	7110
INDIAN CREEK	3.			5-122	8		0.002	0000	0200	30.0	0.00			
CREEK	7.00			5-123	#IFISCUS		0.001	0.002	7000	000	000	0000	21000	210
*I VE *		LEFT	220CT79	191-9	HINI SCUS	•	< 0.0C1	0.052 <	0000	2000	0000	0000	0.00	000
R I VER	ô	w	220C174	)-16 <i>?</i>	HIBITCOS	•	0.001	> 200*0	10000	0.001	0.001	00.0	0.002	100
ENVESSEE RIVER	ς.	•	220C179	6-103	MIET SCUS		0.001	200.0	0.062	0.003	0.001	00.0	0000	100
RIVER	7	-	250C 179	2-501	#1818COS		200	300	73000	0.005	70000	0.003	0.018	\$ 10°
x 1844	02.10	-	250CT7e	207-9	H19150.05		00.00	83.0	0.002	00.00	0.063	20000	0.01>	.015
	305.10	-	2500179	5-203	HIBI SCOS		0.001	70000	20000	6000	0.002	£003	0.01e	310.
#1 VE #	ъ.	Left		2-201	MIMISC(S		100.00	3.002 <	730.0	0.001	0.001	0.001	0.00%	2000:
ESSEE RIVER	ø	•		902-4	4181 SCUS	•	100.0	20000	0.001	2.003	00.0	00.0	10000	400.
ESSEE MIVER	٠,	Litt	-	2-700	MIEISCOS	•	0.001	0.002	0.001	0.001	0.001	0,001	C 001	.00.
FINANCE ALVED	٠, ۱	H		5-213	41515.US		00.00	> 200*0	120.0	0.061	10000	10000	၁ <b>၀၀•</b> ၁	00.
WILLIAM NIVER S		101	213027	5-614	6	•	V 100.0 V	> 200° C	0.001	0.001	10000	00.00	00000	1.007
TENNESSEE FIVER 3	59.00	164		5-515	HIBISC 05		× 100°0 ;	0.002 <	0.001	100.0	0.001	00° 0	0000	00

TO THE PROPERTY OF THE

ENGINERATING AND ENVIRONMENTAL STODY OF OOT CONTAMINATION MUNISVILLE SPRING BRANCH, INCHAN CREEK, AND ADJACENT LANDS AND NATERS WHEREFER RESERVOIR, ALABAMA

# TASKS - ACUATIC SIDTRANSPORT (EXCLUDING VERTERRATES)

STRF & C	5718	HC41 23N1 LCC4 710N	ZUNTAL TION LATE	51647	SAMPLE TYPE-SPECIES	461941 1683	'CTAL C.J. UDT-C.P 1.JG/G)	VCENTRAT DD T-P, P (US/G)	10%S UF 1 0000-0,P 106/c)	COD-P. P. P. (16/6)	TOTAL CONCENTRATIONS OF DOT IN AQUATIC GRGANISMS EIGHT DOT-C,P DOT-P,P DOD-C,P DUE-P,P FGM) 146/6) (UG/G) (UG/G) (UG/G)	CGAN ISHS UUE -P + P (UG/G)	101AL H IN (UG/G)	UG78
H-VILLE SPRING SK H-VILLE SPRING SH	4 4.5C		18.X.17.9 16.JC179	y 5-142 3 5-143	LEWA-SPIRODEIA Lema-Spirodeia	, .	0.001	0.410	0.760	2.610	0.240	0.550	3.750	3.751
FLINT FIVER FLINT FIVER LIMENTONE CREEK LIMENTONE CASER	22.70 22.70 18.00	27. 84. 17. 84. 17. 54. 17. 54.	# 25CC779 # 25CC779 M 2.OC779 NK 22UC779	5-171 5-172 5-176 5-165	SEDIMENT SEDIMENT SEDIMENT SEDIMENT	••••	0.014	0000 3768	0000 0000 0000 0000 0000	0.012	00.00	0.032 0.012 0.020 0.012	0.114 0.030 0.048 0.052	0.0411
BARKEN FORK CREEK M-VILLE SPRING BK M-VILLE SPRING BK M-VILLE SPRING BK	00000		245EP79 2555 P74 255EP79		200PLANKTON 200PLANKTON 200PLANKTON	0.110	0.300	0.410	12.000 9.660 21.900	22.18 33.780	4.550 3.360 7.750	-	51.960 221.160 416.100	51.960 221.160 *16.100
11.6	,		67 9 35 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 2 0 6 4 C	200P LANKTON 200P LANKTON 200P LANKTON	00.2.0	2.750	2 3 <u>9</u> 2	000 c c	80.50 80 80 80 80 80 80 80 80 80 80 80 80 80	6.740 12.500 19.400		359. 640 464. 550 689. 600	359.640 664.550 689.600
SPRING SPRING SPRING SPRING	<b>10100</b>		1506C79 1506C79 1506C79		ZOOP LANKTON ZOOP LANKTON ZOOP LANKTON ZOOP LANKTON	0.260	19.200 20.000 21.500	25 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	12.8.00 12.8.00 14.8.10 18.8.10	32,58,5	13.500 4.850 4.260	38.500	1230.4 1230.4 880.350 697.330	1230.4 1230.4 660.350 697.330
2000	***		255E P79 255E P79 255E P79 150EC79 55EP79	***	2009 LANK TON 2009 LANK TON 2009 LANK TON 2009 LANK TON 2009 LANK TON	7.450 0.290 0.340 0.162 <	8,260 0,520 0,520	7.210	000000000000000000000000000000000000000	12.40 0.2.40 0.2.40 2.7.40	1.550		154.960	154.750 154.960 1.730
# # # # # # L	0444	;	- 327	****		0.003 0.180 0.210 0.260	0.110 0.890 1.670 1.540 5.810	2.130 60.600 82.800 133 252	0 - 1 + 0 3 - 1 + 0 13 - 8 0 12 - 2 0 9 - 2 30	63.466 63.466 27.766 8.166	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		3.030 3.030 1.90.020 1.90.150 338.660	3.0.30 1.90.0.20 1.45.740 1.90.150
	289.90 289.90 289.40 315.00		* * *	****		0.260 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100 < 0.100	0.230 0.300 0.030		0.0 0.170 0.130 0.130	1.670 1.350 1.100 0.330 0.092	0.420		5.730 4.200 3.600 1.200	4.100 1.100 1.200
TEMESSER NIVER	336 500 300 336 500 336 500 336 500 336 500 336 500 336 500 336 500 336 500 33	LT. 5AWR MIDDLE RT. 5AWR RT. 5AWR RT. 5AWR RT. 5AWR RT. 5AWR	## ;556 P79 ## ;756 P79	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	200PLANKTON 200PLANKTON 200PLANKTON 200PLANKTON 200PLANKTON 200PLANKTON 200PLANKTON 200PLANKTON	0.880 × 0.880	0.030 0.020 0.030 0.030 0.030 0.140	000000000000000000000000000000000000000		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.	0.020	0-171 0-113 0-240 0-270 0-050 1-630 2-430	0.241 0.240 0.240 0.240 0.150 0.150 0.150 0.150 0.150 0.150 0.150
		50.	\$ ¥			0.5.0	0.530	7.090	000	1 40		0.380 1.050 0.050	0.360 0.130 1.050 0.150 0.670 0.140	0.360 0.130 0.130 1.050 0.150 0.350 0.670 0.140 0.190

FUCTABLIES: A. WINIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. 5. WARIMUM TOTAL DUTK CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSCLUTE VALUE.

ENGINERHING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNISYTLLE SPAING GRANCH, INCIAN CREEK, AND ADJACENT LANDS AND MATENS MEELR RESKRUDIP, ALABAMA

# TASKS - AGUATIC BICTRANSPORT TEXCLUDING VENTERRATESI

STREAM	MILE	LUCATION	ۇ چار	CLAA	7 VPL - 5 PF 1 F 5	A 0 100	00 T-9, P (	000-000	4-000	DDE -0. P	9	2	MAX
	•		, ;	;	<b>.</b>		3	136.6	1/90		7.90	106/1	790
FORK CKE	J		24SEP79	5-016A	PHYTOPLANKTON		<i>C</i>	6			9	9	,
BARREN FORK CREEK	J		614 3547	50.00	PHYT OPLANKTON	< 0.069	060.0	2	015	0,0		0.00	200
SE CEE	٠		2~ SEP79	3-6186	PHYTOPLANKTON		v	0.150		0.00	0490	0770	
SP 2 3 3 3 3 5 5	00.0		25SE P79	5-0 19A	PHYTOPLANKTON	0.800	_	1 .9 20	3.080	061-0	0.280	7-670	7.676
			25 Se P 79	2-019	PHYTOPLANKTON	0.100	0	1:180	2.835	0.300	0.480	5.200	5.200
SPRING			2 5SE + 79	5-0190	PHYTOP LANK TON	08000	0	1.10	2.230	0.240	0.3	4.120	4.200
SPRIME			245t P79	5-017A	PHYTOPLANKTON	0.100		1.920	3.790	0.280	0.4.0	6.650	269
SPRING			2455174	5-017B		0.110	0	1.940	3.900	0.310	0.530	00.	6.903
SPLJ %	_		2456 279	24176		0010		2.320	4.340	0.240	0.480	7-650	7
SPR 1 NG			24SEP79	5-0184		0.410	ی	3.400	4	0000	000	12.0086	12.646
	.4		54 SEP 79	5-0186	PHYTOPLANK TON	0.190	0.380	3.000	5.610	0.420	0.910	10.510	10.510
SPEING	.4		24SE P74	3-0180	PHYTOPLANK TON	080.0 >	1.340	0.600	96.4	0.340	0-650	082.80	360
			25SE P79	5-020A	PHYT OPLANKTON	090.0 >	21.0	0.840	1.980	0-160	0.220	3.320	3.400
	5.37		25SEP 79	3-020B	PHYTOPLANKTON	× 0.080	080*0 >	0.1%	2.030	0.150	0-250	3.190	3.350
SPRING	s i		255EP 79	\$-020C	PHYTOPLANKTON	080°0 >		0.170	1.760	0.140	0,210	3-110	3.190
	n		25SEP79	5-021A	PHYTOPLANKTON	< 0.080 <	090*0 >			0.000	34000	00000	00,00
			25SE P70	5-0218	PHYTOPLANK TON	× 0.080	080.0 >	080.0 >	0.140	* 0.00 ×	0.000	0.140	0.460
2 1 1 2 2			255E P 79	2-0516	PHYTOPLANKTON	0.080	080.0	0°0°0	0.00	0.00.0	0*0*0	0.000	○ <b>* + •</b> 0
INDIAN CREEK			55577	4700-C	PHYTOPL ANK TON	0800 >	080.0	0.710	1.100	0.130	0.210	2.150	2.310
INDIA CREEK			7355	200	PATT OF LANK OF	080 0	,	0.710	1.480	0.120	0.160	2.580	2.000
INDIAN CREEK			2456 970	27007	BUNCTORS ANGTON	08000			1.380	21.0	0.190	2.400	2.560
INDIAN CREEK	0.0		24.CE P74	45.0	SOLUTION AND PARTY						500		3740
INDIAN CREEK	000		24SEP79	5-0150	PHYTOPLANKTON	0000						3 6	
INDIAN CREEK	900		SSE P79	5-0014	PHYT OP LANKTON	00000	,		32.	220	046		
INDIAN CREEK	000		5SEP 79	9-CO1B	PHYTOPLANKTON	09000 >	0.000	1.180	2.340	0.230	0920	200	2,740
INCI AN CRUEK	0		5SE P 79	2.00.5	PHYTOPLANKTON	0 <b>000</b> >	001.0	1.150	2.240	0-230	0.370	800	170
INDIAN CREEK	000		25 SF P 79	5-022A	PHYTOPLANKTON	0.180	0.120	0.540	1.980	0.160	0.220	3.500	3.500
THOIR CAREA			255E P79	5-022b	PHATOPLANK TON	090 0 >	080.0	0.190	2.030	0-150	0.220	3.1%	3.350
TOTAL CASES	1		255E P 79	2-055	PHATOPLANKTON	0000	0.530	6.	1.760	0-140	0.210	3.110	3.1.8
	7 9 9 4		2022 230	7	THE COLUMN TOWN	080*0 >	090-0	> 080°0 >	0.080	0.040	0 000	0000	90.0
-	000		2030 2030	2000	SOLVER SOLVE	080-0	28000	08000	0.000	0.00	0.0	3	3
	289.40	• 6	2856 979	750-6	PHYTOPLEAN TON						000	000	3
	289.90	9100 IN	PEC BAC	4	NOT ANY TOPING								0000
	269.90	1001	265t P79	5-6330	PHYTOPLANKTON	0.0.0	9						
*1 VE 4	289.90	٩٢.	28SE + 79	5-034A	PHYTOPLANKTON	0.0.0	9	0900			3		
* I VE R	289.96	٠ د	285EP79	5-0348	PHYT GPL ANK TON	0.00	0.000						
4 I VE R	289.90		285F P79	•	PHYTOPLANKTON	0800 >	06000	> 080 0	0.080	040	0	0000	
	115.00	٠	27SE P79	5-023A	PHYTOPLANKTON	00000	॰	۲,	0.080	0.0.0	0	0000	
	315.73		2756 279		PHYTOPLANKTON	080°0 >	ç	> 080 0	0.000	0.000	0	0-000	
EMPS SEE	315.00	Lf. SAMK	4 7SE 479	5-0-36	PHYTOPLANK TON	080*0 >	080*0 >	> 0.0.0 >	0.080	0.0.0	0	0000	70%
ENTITE DI	315.00	7	275E P74	5-C2*A	PHYTOPLANKINY	0.080	ို	> 080.0 >	0.060	0,000	0.0	0000	2
	318.30		275E 274	5-0245	PHYTOPLANKTING	080°0 >	060.0 >	> 080 0	08000	0.000	0.00	200	004
CSSEE MINE	ر د د	g	27SEP74	2-0540	PAYTOPLANKTON	< 0.080 ×	•	> 030.0 >	08000	0.0.0	0.0.0	0000	300
THE STATE OF THE S	315.00		4143517	5-C254	PHYTOPLANKTON	090*0 >	09000 >	> 030°0 >	0.000	3000	0.000	00000	9
TATE OF THE PARTY	3	F. T.	275c 079	5-0259	PHYTOPLANKTON	× 0.080	08000	< 0.080 ×	0.050	× 0*0*0	0.0.0	000	04
7 . 7 . 4	2												

CALINCEALNO EN ENVINCIANTENE STOLY THE DOT CONTAMINATION HANGESTAND ACTUACENT LANDS AND WATERS WHICH SHEMME BESCHAULE AND ACARGENT LANDS AND WATERS

# TASKS - ALUATIC SLUFFANSPORT (FRCEUDING VERTERRATES)

5 76:01	411.6	HORI ZUNTAL LOCATION	اد بادر	CIGAL	SAMPLE TYPE-SPECIES	COT-0,P DOT-P,P (JG/L)			6 201 026-0,0 (JG/L)	106/L)	101AL 41N ( UGA.)	DUTA #4X (UG/L)
4	305.60	=	St 0 351 7	5-V20A	PHYTOPLANTON	(40.0 > 080.0 >	0.080	0.00.00	> 040.0	0.0	00000	0000
Transfer of the state of	345		275.279	1073-6	PAYTOPE ARK TON	<b>o</b>	040.0	080.0	V 0.000 V	0,000	00000	0000
3	246		200000	7-6-0	20 PAC 1971 ALC 1971	٧,	08000	, Ca0.0 >	> 0 0 0 0	8	000	J0** J
-	365.20	٠.		4277-4	PHYTCH ANATON	0.000 0.000				0.0.0	000	034.0
	345.40	7		3-0-C	PLAY OPLANT OF	V 080					000	
4.1%	346 ,26		215574	5-04BA	PHYTCPLANK TON	· ~	080 0	2000	0,000	90-0		
3	345.26	*I Souté	24 58 1	9-70-5	PHATCPLAKKTON	0 0 0	0.000	0,000	> 0.0.0	0	3000	0040
A14 3355 4 3	345.2	3	. 75e +74	3470-6	PHYTCPLANKTON	0 > 080*	030.0 >	080.0 >	> 0+0*0 >	0,000	00000	034.0
HILL TO THE PARTY OF THE PARTY	350,00	-	755.270	40.50-S	PHYTOPLANKTON	ç	080*0 >	0.0.0	> 0.0.0	0.0.0	00000	0000
10 MEN 22 C M 1 V C 4	970.00	***	275EP79	5-0704	NCL YAPI OLAND	·	900	A 0.050 A	V 0.0.0	0.0.0	000 0	00**0
7	000	• 6	77777	2000	NOT WALL TO THE	0 80 0	0.060	v 0°0 0	V 0000	0.0	0000	000
97 LO 3 45 14 5	300	110017	7,000	1000	FULLYNG TOURS TO	· ·	090.0 >	0.000	> 0.0.0	8	0000	00000
4 . J C. C.	380.00		7.5.070		10 F	000 0 / 000 0 /		08000	> 0*0*c	0.0	000	300
37.6 340	00.00	-	75.079	4160-4	ACTION OF THE	7 080	030.0	20000	2000	0,0	0000	500
. 5 SE R . 1	350.00	; ;	275.70		PHYTOP AKKTON		08000			0.000	000	00,00
7	350.06		4 75 F 274	3-0316	PHYTOPLANCTON	0 > 090	030.0 >	090.0	0000	30	300	
BARREN FORA CREEK			5455079	910-9	AA Te a	•		•		•	•	,
2407 × 414	0,00		**************************************	3-17-6	# F F B		•	•	•	•	•	
5027 - P74	27.70		2007	2-12/	EATER		•	•		•	•	•
			57 T 57	21-	AATER	0.051 0.020	0.041	1,000	14000	0.020	0.214	0.214
THE SELECTION OF THE SE			255EP79	410-4	AATER STER		•	•	•	•	•	•
TATELY STATES OF			120217	100	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•	•	•	•	•	•	•
MINE CONTROL BE			2616 979		4 1 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4	•	•	•	•		•	•
A CAMPAGE AND A			14067 20		A C L L X	•	•	•	•	•	•	•
INDIAN CREEK			555 P 79	200	MATER MATER	•	•	•	•	•		
INDIAN CREEK	000		245+P79	5-015		•	•	•	•	•	•	•
INDIAN CREEK	0.60		04.0303	54-04	#ATER	• •	• •	•	• .	• .	•	•
INDIAN CREEK	• 00		55EP74	100-6	HATER	• •	• •		. •		• •	• •
INDIAN CREEK	0°*		255 P79	3.70°	WATER		•	•	•	•		. •
JADIAN CREEK	9		150EC 79	202	WATER		•	•	•	•	•	•
LIMESTONE CHESK	18.00		2	44.4			• 6	.;		•	•	•
	289.90	11. EAM	285E P 79	5-032	2 L	5	2	1000	0.000	5	10.0	19/0
TENNESSEE AIVER	289.40	*100LE	265E 479	5-033	MATER	, ,	, (	•	•	•	•	•
TEMISSEE HIVER	289.90	<u>.</u>	285E P79	5-034	MATER	• •	, ,	•	•	•	•	•
EM-SSE E	315,000	-	275E P79	5-023	WATER			• (	• •	•		•
5 S E e	315,00	4100		5-024	WATER	•		. •		• •	• •	•
E RIVE	315.00			S-0-5	MATER	•	•	٠.				• •
55EE 41	345.20	•		\$-62p	MATER		•	•	•	•	•	. •
FWESSE 6	345.0	¥ •	275E179	5-027	MATER	•	•	•	•	•	•	. •
ENVESS. E MINE	345.0	-)	, 15F P74	6.70-5	MATER		•	•	•		•	٠.
375 41Ac	350.00	- 7	2756 P 19	2-0-5	EATER	•	•		•	•		•
ų .		1001	2 156 274	5-033	MATER	•	•			•	•	•
3255 #1 VE	320.00	¥ 75 · 1 · 1	51 c 510	5-031	MATCH		•	•	•	•		•

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREFK, AND ADJACENT LANDS AND NATERS WHEELER RESERVOIR, ALABAMA

TASKS - AQUATIC BIOTRANSPORT (FXCLUDING VERTEBRATES)

001-0,P 001-P,P 000-0,P (00-P,P 00E-0,P 00E-P,P H1N MAX (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) FOOTNOTES: A. MINIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERD. B. MAXINUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE. SAMPLE LABID TYPE-SPECIES MORIZONTAL LOCATION DATE MILE STREAM

n premientality with a

ENGINERAND AND ENVIRONMENTON OF BOT BOT BOTANDAMATION MONISAILLE SYKING GARNAY INCIEN CREEK, AND ADJACENT LANDS AND WITERS NHENEELER RESERVOIR, ALAMAMA

100

### TASKS - ALCATIC FIDTHANSPORT (EXCLUSING VERTESPRATES)

	0.34C 0.560 0.260 0.520 0.290 0.530	~~	1.420 2.080 2.590 2.640	led ;	2.900 3.060 4.830 4.910	40.4		٠.		0	٥.	1.300 1.460	• ~	0	0 (	0000	- ~	~	-	٠.	00000 0000	0	٥٠	000000000000000000000000000000000000000	•	0	00	0000	00000	00000	000000	0000000	000000000	000000000000	00000000000000
r 506-0,P	V V V	30		0.150		_		0900	~	V	~		0500	$\checkmark$	V \						0,000	· 🗸	۷,	0.0.0	· •		v	v v 1	8 6 8 8 5 6 6 6 7 7 7 7	· · · · ·	· · · · · · ·	~~~~~	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
15 0F 001	<b>~ ~ ~</b>	080.0	~						~	V	~			~	0000 > 0	/					~	~	٧,	0.000	~	~		٧,	~ ~ ~	~ ~ ~ ~	~~~~	~~~~~	~~~~~	~~~~~~~	~~~~~~~
0.00CENTRATIONS 0.00-0, P. 0.00-P, P. (UGZL)	0.220 0.220 0.147 0.147		<b>.</b> .:		~	2.920					090-0 > 0			v	080000000000000000000000000000000000000	-			0.620		~	0 < 0.080	٧,	<b>~</b> ~	•	~	١		· · ·	~ ~ ~ ~	· · · · · ·	· · · · · · ·	, , , , , , ,	, , , , , , , , , , , , , , , , , , ,	· · · · · · · · · · · · · · · · · · ·
VED CONCE P 030-01			_			0 1-670	• 0	0.430	~	~	~			~	080 0 0	/					~	~	<b>~</b> '	/ V		~	v	,	0 0 V V	~ ~ ~	V V V V	V V V V V	· · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
-CISSCLVED	>	0.0	0 0 0 V V	٧,		0 C	· •	080.0 > 0	,	~	V 1	<i>-</i> •	· V	~	<b>v</b>	<i>,</i> ,	<b>,</b> ,	~	<b>Y</b>	<b>~</b> \	<i>,</i>	~	080 0 0 0	<i>,</i>	v	~	~	١	~ ~	~ ~ ~	~ ~ ~ ~	~~~~	~~~~	<b>~~~~</b> ~	~~~~
1790	080°0 >		080.0	0.000	3.120	0.100	2.090	090°C	080.0		240.0 >	380.0	080-0	390°0 >	08000			080.0 >	0.09	380.0	080.0 >	08000 >	080.0 >		080.0 >	080*0 >									
SA 40 LE TYPE -50 LTES	111	2 4	1 1 2 1	PHYTCPLANKTON DAVIDS AND TON	H	4 4	4	2 0	PHA	a	- L			LLA	PHYTOPLANKTON			٠	PHY	_	PHYTOPLANKTON	Pry	PHYTOPLANKTON	. 0.	¥17	7	PHYTCPLANKTON		PHYTOP: ANKT	, • •	PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT	PHYTOPLANK PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT	PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT	PHYTOPLANKI PHYTOPLANKI PHYTOPLANKI PHYTOPLANKI PHYTOPLANKI PHYTOPLANKI	PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT PHYTOPLANKT
2141			207	2-0173				5-620b			2-621		· w	Š		¥100°S	, 6,	\$-001C		2000	, r.	•	5-0320	, ,,	٠,	٠,٠	2-03-4		, •		5000	, no no no no no	, <b>ຄ</b> . ຄ. ຄ. ກ. ກ. ກ.	, <b>ຍ</b> . ຄ. ຄ. ກ. ກ. ກ. ກ.	, <b>ຍ</b> . ຄ.
chtal Ich Jate	454 384 3 474 384 3 474 384 3	2556 P79	245=27	24 0 0 0 4 5 C	2.45E P79	250 m/4/	255E P7	255E P74	. 5 SE P 79	£2355.	450367	\$5 p 79	55 L P 79	24SE +75	24SE P79	54.FP 70	\$ SE # 79	5SE P 79	255 P 74	2555.070	PK ZBSFP79		2656 P79	2855 P79	185c + 74	DANA ZESEPPO									
40812 20541	55. 55. 55.	900	200	0 5 0	e c	0,4	16.	.37	00.	ر ا	o ç		00.	00.	000	200	03	00.	9.0	و د د د	00 LT. 54	SC LT. DA	O LY. BAWK	30 MIDLE	STORE OF	40 . R		•			:::	112	11. 11. 11. 11. 11. 11. 11. 11. 11. 11.	# # # # # # # # # # # # # # # # # # #	# # # # # # # # # # # # # # # # # # #
	71 H H	ው ው ጥ ተስ	r or	 	. a.	~ ~ # 1.	a a	20 E	œ,	0.5° 0. III	34 5.90	) () \ 0	C	0	0.0	00.4	,	•	00.0	ب د د د د	2	œ.	289.40	· ~											
ī	* Y *			LLE SPRIME		LLE 594145		LLE SPRIMG			M-VILLE SPRIM.	2 C. F.					3	A CREEK	INDIAN CREEK	NOTAL CREEK	7 VE	7	SSEE RIVER	2	E 41	7 6	, ,								نوان بر بدر بدر بدان
514. AM	BARKEY BARKEY BAKKEY	H-VILLE M-VILLE	4-VILLE	1-V 1-L	17-1	1-414	H-V 16	7-416	M-VILLE	4-V1 LL E	1-VILCE	INCIAN	INDIAN	INDI AP	NY I GY	INDIAN	I NDI AN	1001	VI ON I	V I GW	TEMMESSLE	TENE	TEMPESSEE	TEMESSEE	TENNESSE	TEMES SEE	TE MESSE		TEWESSEE	TENNESSEE TENNESSEE	TEWESSE TEMESSE TEMESSE	TEMESSE TEMESSE TEMESSE TEMESSE	TEWESSER TEWESSER TEWESSER TEWESSER TEWESSER	TEMESSE TEMESSE TEMESSE TEMESSE TEMESSE TEMESSE TEMESSE	TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE TEWESSE

S. E. S. Marie W. S.

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ENGINERING AND EVVIRONMENTAL STUDY OF DDT CONTAMINATION MUNISVILLE SPRING BRANCH, INDIAN CREEK, AND AUJACENT LANDS AND WATEUS MHEELER RESERVOIR, ALABAMA

### TASKS - ADURTIC BIOTRANSPORT (EXCLUDING VERTEBRATES)

14 19 10 10 10 10 10 10 10 10 10 10 10 10 10	1	HORI ZINTAL	اله		SA WDLF	001-0,P 001-P,P 000-0,P 000-P,P	1550LVE DOT-P.P	DOD-0.P	COT-0.P DOT-P.P DOD-0.P DOD-P.P	OF 001 -	1 4	-TOTAL	DOTR
		51.400	1 1		ree-sectes	106/17	(1/20)	(36/1)	S6/L)	1700	(787)	( NG/L)	(Ye/L)
TENNESSEE RIVER	345.20	LT. BANK	57SE P79	\$-026A	PHYT OP LANK TON	> 0000 >	0.060	< 0.080	080 0	> 0*0*0 >	0.00	00000	0040
*		٠.	275= +79	5-026b	PHITCPLANKTON	> 050°0 >	0.080	0	09000	> 0*0*0 >	0.040	0000	0000
υ.		٠,	275E +79	2-0-5	PHYTOPLANKTON	> 080°0 >	080	0	08000	> 050°0	000	0000	0
* (		- 1	STSEP 19	5-027A	PHYTOPLANKTON	> 080°0 >	0.080		08000	> 00000	0.0.0	00000	204.0
* '		•	27SE 279	5-027E	PHYTOPLANKTON	> 090°0 >	080	0		> 0000 V	0,00	0000	00000
		KT. BANK	27SE P79	2-05 ×	PHYT DPLANKTON	> 000°0 >	8		0.000	> 0.0.0 ×	0.0	0000	00**0
* 4		_	ZISEP79	5-028A	PHYTOPLANKTON			0		> 00°0 >	0.0	0000	004.0
TOTAL SOUTH AND THE	342.60	1001	2 125 4 79	4870-4	PHATOMERADA	990	8	0		> 000 0 V	8	0000	004.0
	340.00	- 1	77577	200	PHYLOPLANKION	0.080		0 '	080		0.0	000	30
	000000	٠,	C CSEP/Y	4670-C	PHATONE ANK TON	> 080.0 >	090.0	0	0.000		0.0	000	0.00
	00000	٠,	ZISENIA	250-6	PHYTUPLANKTON				0000	0	0.00	000	0.400
			VISE V	3-0-6	PHYLOPIANK TON	> 080 >		0	0.080	> 000°C >	0.040	000.0	004.0
	0000	410014	2 PSE PTY	5-C30A	PUAT OF LANKTON			0	080*0 >	> 0*0*0	800	0000	004.0
TEMPERATE AT VER			27SEP79	5-030B	PHYT OPLANKTON		0.080	800	080*0 >	> 0+0-0 >	0.0.0	0000	0000
		2	510 351 2	5-030C	PHYTOPLANK TON	> 080°0 >	080	090.0 >	0.0000	> 0*0*0 ×	0.00	0000	0040
21.	0	•	275E P76	5-031A	PHYTOPLANKTON	> 080°0 >	080	08000	• 080° 0 >	> 0.0.0 X	0.00	0000	004.0
TERNESSEE A IVER	350.00	LT. BANK	275EP79	5-0318	PHYTOPLANK TON	> 080 >	0.080	0.080 >	080.0 >	> 0+0*0 3	0.000	00000	000
30.50		•	7 25 7 7	7769-6	PHYS UPLANKIUM	> 080*0 >	000	080*0 >	080*0 >	> 0*0°0	8	0000	0
BARREN FORK CREE	EK 1.20		24SE P79	5-610	#ATER	•	•	•	•	•	,		
			180C 179	5-114	WATER	•	, ,			, ,		•	•
FLINT RIVER	22.70		250CT79	5-157	MATER	•			. •		• •	•	•
FLINT RIVER	22,70		25CC 179	2-1-5	MATER	•	•	. (	. •			•	•
SPRIMS			25 SE P 7 9	5-016	WATER	•	•	٠.				• •	•
			150EC79	54-01	MATER	. •	. •	. •					•
SPRING	ď		25SEP79	5-020	WATER	•	•		•			•	•
SPAING	8		255EP79	5-021	MATER	•	•	•				. (	• •
SPRING			1ADE C 75	5403	WATER	•	•	•	•	. •	٠,	٠.	. ,
INUIAN CREEK	00.0		55EP79	200-5	WATER	•	•	•	•	. •	. •		• •
INDI AN CHEEK	000		24SE P 79	5-013	WATER	•	•	•	•	•	•	. •	, ,
٠.	0.80		16DEC79	5M-04	MATER	•	•	•	•	•	•		•
	00.4		5SE P79	2-001	HATER	•	•	•	•	•	•	•	•
INDIAN CREEK	00.4		5 5 5 6 P 79	5-022	WATER	•	•	•	•	•	•		•
	4.60		150cC79	5 H-02	MATER	•	•	•	•	•	•	•	
LIMESTONE CREEK	18.00		220C 179	9-150	WA TER	•		•	•	•	•	•	•
LIME STONE CAFFA			220C179	2-104	WATER	•	•	•	•	•	•	•	
TENNESSEE 41VER		_		5-6.35	WATER	•	•	•	•		•	•	•
		-		5-033	HATER	•	•	•	•	•	•	•	•
u		•	265E P74	5-034	MATFE	•		•	•	•	•	•	
TENNESSEE RIVER	315.00	_		5-023	MATER	•	•	•	•			•	•
MESSEE.		ä		>-050-4	MATER	•		•	•	•	•		•
<b>.</b>		8 T 8 8 WK	275F P79	\$20-c	MATER	•	•	•		•	•	•	•
		٠,		2-6.26	TP TE S	•	•	•	•		•	•	•
		•		2-627	#	•	•	•	•		•	•	•
		٠,		20-4	2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	•	•	•	•	•	•		•
<b>.</b>		-,		620-4	MATEL	•	•	•	•		•	•	
1	3	~10JLE	27SE 079	2-030	A PER	•	•		•	•	•	•	•
¥ 1 ×	350 000	LT. SAME	27SF P79	2-031	MATEL	•	•	•	•	•		•	•

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ENSINEERING ALL ENVIRONMENTAL STUDY OF OUT CONTAMINATION HONGENITAVILLE SPRING SRANCH, INCIAN CREEN, AND ADJACENI LANDS AND MATERS MESERVOIR, ALARAMA

TASKS - ABUATIC ALTTRANSPORT LEKCLUDING VERTEPHATES)

001-C.P 001-P.P 050-C.P 000-P.P 004-C.P 004-P.P "IN "AK 0571) (0571) (0571) (0571) (0571) (0571) (0571) SAMPLE LARIO TYPE-SPECIES HORIZONTAL MILE LOCATION DATE

STREAM

FURTALIES: A. WINJALW TOTAL DDTM CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. E. WAXIWOW TOTAL DDTM CALCULATEL BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

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#### ENGINGERING ANG ENVIRUNHENTAL STUDY DE DOT CONTAMINATION HUNTSVILLE SPRING ERRANCH, INDIAN CRCER, AND ADJACENT LANDS AND MATEKS HHEELER RESERVDIR, ALABAMA

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### TASKS - AQUATIC BINTRANSPURT (EXCLUDING VERTEBRATES)

5-18E a.s.	#10£	HORIZONTAL LOCATION	DATE	LAE	LA910	SAMPLE Type—Species	TOTAL	T0TAL M02+403	PHOS PHORUS	CARBON TOC SOC	SQL 105 015 \$U\$	S
BARKEN FORK CHEE	K 1.20		2 4SE P 79	STEMART	\$-010-5	PHYTOPIANK TON	•		,	8 - C 9 - E	,	
ARKEN	-			STEWART	•	PHYTOPLANKTON			. •			3 2
ARREN FORS	~		2 4SE 474	STEWART	5-0160	PHYTOPLANK TON	•	•	•	7	•	-
3,45	0		43SE P 79	STEWAR 1	8-0 19A	PHYTOP LANK TON	•	•	•		•	0
-VILLE SPRING	0		255EP79	STEMART	5-0198	PHYTOPLANK TON	•	•	•	4.4 3.8	•	•
9¥ 74 95	0		255E P79	STEWART	5-0190	PHYTOP LANK TON	•	•	•	m	•	_
LE SPKING	~		24SE 479	STEWARI	5-017A	PHYTOP LANK TON	•		•			0
LE SPRING	~		2 4SE P 79	STEWART	5-0178	PHYTOPLANK TON	•	•	•		•	-
SPRING			24St P79	STEMART	5-0 170	PHYTOP LANK TON	•	•	•	5.0 3.9	•	•
LE SPAING 3	٧		24SEP74	STEWART	5-0184	PHYTOP LANK TON	•	•	•			•
LLE SPRING B	~ ∝		5 + SE + 79	STEWART	5-0188	PHYTOPLANKTON	•	•	•		•	-
LLE SPRING 9	~		44SEP74	STEWART	5-0180	PHY TOPLANK TON	•	•	•		•	
LLE SPATAG B	•, ∡		25SE P79	STEMART	\$-0.0A	PHYTOP LANK TON	•	•	•	5	•	9
SPRING 5	er er		25SE p79	STEMART	5-020B	PHYTOPLANKTON	•	•	•	4.4 3.6	•	•
ø,	er i		255E P79	STEWART	2-6.200	PHYTOPLANKTON	•	•	•	•	•	•
SPRING 8	ar i		25 SE P79	STEWART	5-021A	PHYTOP LANK TON	•	•	•	4.2 3.4	•	~
SPRING	œ.		25 SE P79	STEMART	\$-0.21B	PHYTOPLANKTON	•	•	•	4.4 3.6	•	•
و چ	ar i		25SE 479	STEWART	5-0210	PHYTOP	•		•	4.4 3.6	•	s
1	00.0		55E P79	STEMART	5-00'A		•	•	•		•	54
INDIAN CREEK	300		55E P 79	STEWARI	2-005	PHYTOP LANKTON	•		•	4.4 3.9	•	22
ANDIA CREEK	00.0		55EP79	STEWART	2-0020	PHYTOPLANKTON	•	•	•	^	•	a
INDIAN CREEK			245EP79	STEWART	A C 1 O C	PHYTOPLANK TON	•	•	•	~	•	•
TADIAN CAEEN			2456 674	STEMPES	2012	PHY TOP LANK TON	•	•	•	~	•	<b>.</b>
TANDAR CARE	•		643E 473	A TOTAL OF	700	PAT OF CARE TON	•	•	•		•	•
TAND AND DESCRIPTION			66.6.30	STEMBRI		PHY TOP LANK TON	•	•	•		•	£ .
THOU AN CORES			5.55 D 70	TO A DISTOR		THE CONTRACTOR	•		•	0	•	•
INDIAN CAPE			255677	STEERS		ACTIVATION AND TOTAL	•		•	~ .	•	2
INDIAN CREEK			255F P70	CTEMARY	1000	DIAMATOR AND TON	•	•	•		•	<u>.</u>
INDIAN CREEK	4.00		255 979	S TEMAR T	27074	DAYLOD LANKTON	•	•	•	7 0 0 0	•	
	289.90	LT. SANK	285E P79	STEMART	5-032A	PHYTOP LANK TON	. (		• •	, v	• •	
u	36.687	5	485EP79	STEMART	5-0-3E	PHYTOPLANK TON	•		•	-		· ·
EMESSEE	289.90		285E P74	STEWART	50320	PHYTOP LANK TON	•		•	~	•	17
	00.687	MIDDLE	265EP79	STEWART	5-033A	PHYTOPLANK TON	•	•	•	~	•	4
TENNESSEE KIVER	289.90		26SE P79	STEWART	5-033b	PHYTOP LANK TON	•	•	•	~	•	•
	289.90	#100 F	265E p79	STCHART	5-0330	PHYTOPLANKT IN	•	•	•	2.7 2.0	•	•
E T C S S C E	00.087	-	285E P79	STEMARI	5-034F	PHYTOPLANK TON	•	•	•	8-1 5-2	•	2
ENVESSEE	36.687	RT. DANK	285E P79	STEWART	5-0346	PHYTOPLANKTON	•	•	•	~	•	~
	06.687	KT. EANK	285E P79	STEWART	5-0340	PHYTOPLANK TON	•	•	•	2.5 1.8	•	<b>~</b>
EMESSE E	315.00	-	. 15E P79	STEMARI	5-023A	PHYTOPLANK TON	•	•	•	2.6 1.9	•	Ņ
,	315.00		275E P79	STEWART	5-0238	PHY TOP LA WK TO W	•	•	•	304 207	•	~
3707	313 000	1. 3AM	275-779	STEWART	5-0230	PHYTOPLANK TON	•	•	•	2.5 2.1	•	•
ω.	n 1	ייים מייי	275c P79	STEWART	5-024A	PHYTOP LANK TON	•	•	•	~	•	•
TAL SOLE	•	7	215EP79	STEWART	5-C 24B	PHYTOPLANK TON	•	•	•	2.5 2.1	•	•
TACCARD.	315,00	36.1	. 75F P75		2-0240	PHYTOPLANKTON	•	•	•	2.7 2.3	•	•
10000	•	A L	275E P79	STEWART	5-0-5A	PHYTOPLANKTON	•	•	•	7.9 2.4	•	· •
	•	* PA *	275E 279	A P P	9	3CK 474   0C L A 70 C						9
							•	•	•	0.1	•	•

A consequence

Chulmeralma and Envianmental Study of Oot Contamination Huntsville spring branch, Indian Crefk, and Aduacent Langs and Maters MHEELER RESERVOIR, ALABAMA

## TASKS - AGULTIC PLOTGANSPORT (EXCLUDING VERTERRATES)

ž		•	•	•	•	•	•		•	•		•		•	•	•	•		•	•					٠.		• •	٠.	`	• •	•		٣		•	•					•	. •	٠.	٠,	n 4	n •	۸ ۸	Λ.	<b>.</b> •	
5		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	28	, •	•	•	• 1	•	• ;	9 4	•	26.	75	•	*	•	•	•	•	7	=	20	?	;;	;;	3 .	9 :	9 9	2 :	<b>2</b>		•
25.5	:	2 :	:	<b>:</b> :	::	;	9	<b>6</b> 0	•	•	7		-	. 2	1	3:	::	3 :	2:	=	•	2			•	• \$	?	• 1		;	•	3	•	•	ç	-	•	•	•	, ,		, ,		•	•	•	•	•		·
SOL TUS DIS SUS		•	•	•	•	•	٠	•	٠	•	•	•	•	•	•	•	•	•	•	•	•	30	001	•	• •	, ,	•	• •	•		•	•	•	•	•	2	•		•	•	•		, •		•	•	•	•	• •	
CARBON CARBON TOC SOC		•					-	•	~		~		-	• ^						•	•	•			•	٠,	•	•	•		•	•	•	•	•	•	•	•	•	•	•	. •		• •	•	•	•	•		
0.00 4.00 7.00 7.00 7.00	1;	· ·	,	,	, ,	10		9.	7.4	2.4	2.4	^	0			,	•	,			•	•	•		• •	• •	•	•	•		•	•	•	•	•	•	•	•	•	•	•	, •		• •	•	•	•	٠	• •	
28GAVIC TCTAL CARBON PHOSPHORUS TOC SOC	(V9# )	•	•	•	•	•	•	•	•	•	•	•	. •		•	•	•	•	•	•	0.0		•				4,40	0		0.23	5.0	•	6.39	•	•	•	•	0.05	0	0.0	0.0	0 0	90	6	4	3	2 6	500	000	
TOTAL TOTAL INC.		•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	0.18	•	•	. •	0.73	•	9			0.45	0.32	•	ن• د•	•	•	•	•	0.33	0.33	0.37	0.34	0.36	0.36	6.42		1 6	100	700	0.29	
TOTAL KJELDAHL		•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	0.41	•	•	•	1.60	•	. 1	0	•	0.27	0.24	•	0.37	•	•	•	•	0.20	0.14	0.20	0.16	0.35	0.16	0.16	9 4 4		2.0		0.16	
SAMPLE TYPE-SPECIES	201		TO THE PART OF THE	DIAL TO CANA TON	TOTAL STATE OF THE PARTY OF THE	DIAL MARKEDIA	201 201 201 201	PHYTOPLANK TON	PHYTOPINAKTON	PHYTOPLANKTON	PHYTOPLANK TON	PHYTOPLANK TON	WOT MALIGETYNG	PHYTOPLANK TON	PAYTOPIANK TON	MOT ANA TOTAL	101 X	TO CANAL DE LA COLONIA DE LA C	SHATON AND TON		MATER	WATER	MATER	MATER	WATER	WATER	WATER	MATER	2112	MATER	MATER	MATER	WATER	WATER	MATER	HATER	HATER	MATER	WATER	WATER	WATER	MATER	WATER	MATER	MATER		44.64	E 0	44 TEK	
LAP 10	3	4000	940		1000		2	4320	2-078P	2-0 LEC	\$-0.29A	5-0298	5-029C	5-03CA	200		4	4 6 9			5-016	5-114	5-157	5-170	2019	5#-01	2070	205	5M-03	2005	5-615	5H-04	5-001	2-05	5 <del>1</del> 0 2	5-15t	5-164	5-632	5-033	5-034	5-023	295	5-0-5	2020	5-0-5	# C	9 6	1000	269	
LAE	104121	, ;			7177							STEWARI	STEMBRI	STEWART	TEMART.	TOVERST					STEWART	STEMART	STEWART	STEWART		STEMART	_											STEMARI	STEMART	STEMBRT	STEMART								STEMBER	
r :ATE	2745 070	1000	250 370	745.076	71.6 070	775.070		7 1 2 2 7 7	112501	175EP74	2 75E 274	275EP79	275E P79	275E P79	74:079	756 276	77.6 07.5	2756 070	200	•	24 SE P 79	1600179	. 50, 179	2500 179	45 SE P79	150EC79	255E P 79	255E P79	1 PDFC 7	555079	245EP79	160 E C 74	55 EP 79	255E P79	15CEC 79	22(C179	2202120	265EP74	265E P79	265F 174	27SE 079	275c 279	475F P74	2755 279	275 P79	P44.51	756.27	736 1 76 7	2.43EF79	
MURIENTAL	1	1							1177	3	PT. 54 WK	BT. HANK	¥1. 01.¥	4100 L=	41.301	3 00 1	1	7																				LI. FAR	#100 FF	RT. BANK	LI. BANK	#100 F	RI. BANK	LT. CANK		41001	RI. BAMK	41 30 1	T. 84 W	
יוניי.	36.5.20	74.5	1	3.69	365.70	345.70			7.00	345.20	350.00	350.00	350.00	350.00	350.00		350.00	350.00	00.00		x 1.20	20.73	22.10	22.70	0	~	*	9.40	•	00.0	00.0	09.0	00.	٥ •	4.60	18.00	ç	Ç	9	9	ç	9	ŝ	07	50	0	0		350.30	
4	•	-	9 9 9 9 9			BEALT SECURITION				*	•	*		a .	2 3 5 E . W	1 7 5 6 F	1 1 1 1 1 1	44574	3355	•	BARRIN FORK CREE!	F 1 V F F	T 41VER	T KIVER	PRING B	PRINGE	PRING B	SPRING 9	SPAING R	INCIAN CREEK	AN CHEEK	INDIAN CHEEK	A CREEK	AN CHEEK	INCIA'S CREEK	LIMESTONE CREEK	STONE CAEEK	SSEE HIM	ESSEE MINE	ESSEE RIVE	SSEE MIVE	ESSEE AIVE	SSEE HIVE	SSEE 41VE	SSEE RIVE	5 Se F + 1 VE	SEE AT	37.7	ESS.E ~1VE	
24.65		4	2	,	<b>*</b>	5					<i>¥</i>	<u> </u>	5	7. 18.	5	3	3	2	7		84.0	F	F	F	1	1 A - N	N-K	1	1 A - L	INCIAN C	101	2	117	Q.		¥ .	¥ 1	<b>₹</b>	<b>\$</b>	¥.,	<b>€</b>	5	15%	¥ 2	¥	\$	*	5	3	

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A CAMP OF THE

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING RRANCH, INDIAN GREEK, AND ADJACENT LANDS AND MATERS HUNTSVILLE SPRING REFERVOIR, ALABAMA

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### TASKS - AQUATIC STOTHANSPORT (EXCLUDING VERTEBRATES)

							CATI A	SEN		ORGANIC		
		HORI ZONTAL	_			SAMPLE	TOTAL	TOTAL	TOTAL	CAR BON	SOL 105	
STREAM	#  -	LOCATION	DATE	LAP	LAPID	MILE LOCATION DATE LAP LAPID TYPE-SPECIES	K JE LDAHL	M02+N03 6	KJELDAHL ND2+ND3 PH-05PHORUS TOC SCC 015 SUS CA MG	700 500	015 546	CA
FOOTWOTE C:												
TOTAL VOLATILE SIKE	ACM 30 MI	23 301 103 0	0770			TOTAL CAR COLME CAME OF BRIDE GRAND GOT SCHOOL CHOOL						

TOTAL VOLATILE SUSPENDED SOLIDS FOR SAMPLES 5M-C1, 5M-O3, AND 9M-O4. WERE RESPECTIVELY 9, 5, AND 7 MG/L.

THE RESERVE OF THE

Table 5-4A

#### OCCURRENCE AND ABUNDANCE OF PHYTOPLANKTON TAXA IN SAMPLES COLLECTED AFTER A LARGE RAINFALL EVENT SEPTEMBER 5, 1979 (AVERAGE NUMBER/LITER)

Achnanthes       4,673       -         Characiopsis       sp.       132,388       71,645         Cyclotella       sp.       -       3,115       4,673         Dinobryon       sp.       6,230       -       -         Comphonema       sp.       1,558       -       -       -       1,558       -       -       -       1,558       -       -       1,558       -       -       1,558       -       1,558       1,558       5,55		Indian C	reek Mile	
Achnanthes       4,673         Characiopsis       sp.       132,388       71,645         Cyclotella       sp.       -       3,115       4,673         Dinobryon       sp.       6,230       -         Comphonema       sp.       1,558       -       -         Melosira       sp.       1,820,718       1,227,310         Navicula       sp.       9,345       4,673         Nitzschia       sp.       -       1,558         Ophiocytium       sp.       1,558       1,558         Stephanodiscus       sp.       18,690       14,018         Synedra       sp.       144,848       115,255         Chlorophyta       38,938       12,460         Ankistrodesmus       sp.       51,398       68,530         Botryococcus       sp.       9,345       90,335         Bracteacoccus       sp.       4,673       10,903         Chlarydomonas       sp.       4,673       10,903         Chlorogonium       sp.       4,73,480       531,108         Chlorogonium       sp.       -       21,805         Chotaetlla       sp.       -       21,805	Taxa	4.0	0.0	
Achnanthes       4,673         Characiopsis       sp.       132,388       71,645         Cyclotella       sp.       -       3,115       4,673         Dinobryon       sp.       6,230       -         Comphonema       sp.       1,558       -       -         Melosira       sp.       1,820,718       1,227,310         Navicula       sp.       9,345       4,673         Nitzschia       sp.       -       1,558         Ophiocytium       sp.       1,558       1,558         Stephanodiscus       sp.       18,690       14,018         Synedra       sp.       144,848       115,255         Chlorophyta       38,938       12,460         Ankistrodesmus       sp.       51,398       68,530         Botryococcus       sp.       9,345       90,335         Bracteacoccus       sp.       4,673       10,903         Chlarydomonas       sp.       4,673       10,903         Chlorogonium       sp.       4,73,480       531,108         Chlorogonium       sp.       -       21,805         Chotaetlla       sp.       -       21,805	Chrysophyta			
Cyclotella sp.         -         3,115         4,673           Dinobryon sp.         6,230         -         -           Gomphonema sp.         1,558         -         -           Melosira sp.         9,345         4,673         -         1,558           Navicula sp.         9,345         4,673         -         1,558         -         -         1,558         -         -         2,168         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         - <td< td=""><td></td><td>4,673</td><td>_6</td></td<>		4,673	_6	
Cyclotella sp.         -         3,115         4,673           Dinobryon sp.         6,230         -         -           Gomphonema sp.         1,558         -         -           Melosira sp.         9,345         4,673         -         1,558           Navicula sp.         9,345         4,673         -         1,558         -         -         1,558         -         -         2,168         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         - <td< td=""><td>Characiopsis sp.</td><td>132,388</td><td>71,645</td></td<>	Characiopsis sp.	132,388	71,645	
Cymbella sp.         3,115         4,673           Dinobryon sp.         6,230         —           Comphonema sp.         1,558         —           Melosira sp.         1,820,718         1,227,310           Navicula sp.         9,345         4,673           Nitzschia sp.         —         1,558           Ophiocytium sp.         1,558         1,558           Stephanodiscus sp.         18,690         14,018           Synedra sp.         18,690         14,018           Chlorophyta         38,938         12,460           Actinastrum sp.         38,938         12,460           Ankistrodesmus sp.         9,345         90,335           Bactyococcus sp.         9,345         90,335           Bracteacoccus sp.         4,673         10,903           Chlamydomonas sp.         473,480         531,108           Chlorella sp.         7,788         14,018 <td></td> <td>· -</td> <td></td>		· -		
Dinobryon sp.   6,230		3,115		
Comphonema sp.   1,558			-	
Melosira sp.   1,820,718   1,227,310     Navicula sp.   9.345   4,673     Nitzschia sp.   -   1,558     Ophiocytium sp.   1,558   1,558     Stephanodiscus sp.   18,690   14,018     Synedra sp.   144,848   115,255     Chlorophyta			_	
Navicula sp.   9.345   4,673   Nitzschia sp.   -   1,558   1,558   Stephanodiscus sp.   18,690   14,018   Synedra sp.   144,848   115,255   Stephanodiscus sp.   144,848   115,255   Stephanodiscus sp.   144,848   115,255   Stephanodiscus sp.   144,848   115,255   Stephanodiscus sp.   38,938   12,460   Ankistrodesmus sp.   51,398   68,530   Botryococcus sp.   9,345   90,335   Bracteacoccus sp.   4,673   10,903   Chlamydomonas sp.   4,673   10,903   Chlamydomonas sp.   473,480   531,108   Chlorogonium sp.   -   21,805   Chodatella sp.   63,858   24,920   Closteriopsis sp.   34,265   14,018   Crucigenia sp.   126,158   129,273   Dictyosphaerium sp.   12,460   3,115   Eudorina sp.   -   4,673   7,788   Conium sp.   -   2,460   Colenkinia sp.   -   2,460   Colenkin		· · · · · · · · · · · · · · · · · · ·	1,227,310	
Nitzschia sp.   -   1,558   1,555   1,558   1,555   1,558   1,555   1,558   1,555   1,558				
Ophiocytium sp.       1,558       1,558         Stephanodiscus sp.       18,690       14,018         Synedra sp.       144,848       115,255         Chlorophyta       Actinastrum sp.       38,938       12,460         Ankistrodesmus sp.       51,398       68,530         Botryococcus sp.       9,345       90,335         Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       473,480       531,108         Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673       7,788         Conium sp.       -       4,673       7,788         Conium sp.       -       12,460       3,115         Eudorina sp.       -       12,460       3,115         Kirchneriella sp.       126,158       133,945         Micractinium sp.       -       24,920         Pandorina sp.       -       24,92		-		
Stephanodiscus sp.   18,690   14,018   Synedra sp.   144,848   115,255		1.558		
Synedra sp.       144,848       115,255         Chlorophyta       Actinastrum sp.       38,938       12,460         Ankistrodesmus sp.       51,398       68,530         Botryococcus sp.       9,345       90,335         Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       4,673       10,805         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       12,460       3,115         Eudorina sp.       -       4,673         Goleoactinium sp.       -       4,673       7,788         Conium sp.       -       -       12,460         Goleoactinium sp.       -       -       -       -       -       -       -       - <th cols<="" td=""><td></td><td>•</td><td>•</td></th>	<td></td> <td>•</td> <td>•</td>		•	•
Chlorophyta				
Actinastrum sp.       38,938       12,460         Ankistrodesmus sp.       51,398       68,530         Botryococcus sp.       9,345       90,335         Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       473,480       531,108         Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673       7,788         Goleoactinium sp.       9,345       12,460         Golium sp.       -       12,460         Kirchneriella sp.       4,673       7,788         Goocystis sp.       37,380       23,363         Occystis sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       -       24,920         Pediastrum sp.       -       24,920         Polyedriopsis sp.       -       1	•			
Ankistrodesmus sp.       51,398       68,530         Botryococcus sp.       9,345       90,335         Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       473,480       531,108         Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Golenkinia sp.       9,345       12,460         Golenkinia sp.       9,345       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Occystis sp.       -       24,920         Pediastrum sp.       -       24,920         Pediastrum sp.       -       24,920         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115				
Botryococcus sp.       9,345       90,335         Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       473,480       531,108         Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Gonium sp.       4,673       7,788         Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Occystis sp.       -       24,920         Pediastrum sp.       -       24,920         Pediastrum sp.       -       24,920         Pediastrum sp.       -       24,920         Polyedriopsis sp.       -       1,558         Protococcus sp.       -       46,725       269,448     <		•	12,460	
Bracteacoccus sp.       4,673       10,903         Chlamydomonas sp.       473,480       531,108         Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       -       45,168       28,035         Oocystis sp.       -       24,920         Pediastrum sp.       -       24,920         Pediastrum sp.       -       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       -       46,725       269,448         Pteromonas sp.       1,558       3,115	Ankistrodesmus sp.			
Chlamydomonas       sp.       473,480       531,108         Chlorella       sp.       7,788       14,018         Chlorogonium       sp.       -       21,805         Chodatella       sp.       -       4,920         Closteriopsis       sp.       34,265       14,018         Crucigenia       sp.       126,158       129,273         Dictyosphaerium       sp.       31,150       6,230         Elakatothrix       sp.       -       4,673         Gloeoactinium       sp.       -       4,673         Golenkinia       sp.       -       12,460         Kirchneriella       sp.       -       12,460         Kirchneriella       sp.       -       126,158       133,945         Micractinium       sp.       -       24,920         Pediastrum       sp.       -       24,920         Pediastrum       sp.       -       24,920         Polyedriopsis       sp.       -       1,558         Protococcus       sp.       -       1,558         Pteromonas       sp.       -       1,558	Botryococcus sp.	-	90,335	
Chlorella sp.       7,788       14,018         Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Occystis sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Bracteacoccus sp.		10,903	
Chlorogonium sp.       -       21,805         Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Cloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Occystis sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Chlamydomonas sp.	473,480	531,108	
Chodatella sp.       63,858       24,920         Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Cloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       45,168       28,035         Occystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Chlorella sp.	7,788	14,018	
Closteriopsis sp.       34,265       14,018         Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Occystis sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Chlorogonium sp.	-	21,805	
Crucigenia sp.       126,158       129,273         Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Chodatella sp.	63,858	24,920	
Dictyosphaerium sp.       31,150       6,230         Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       -       12,460         Kirchneriella sp.       -       12,460         Kirchneriella sp.       -       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       -       24,920         Pediastrum sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Closteriopsis sp.	34,265	14,018	
Elakatothrix sp.       12,460       3,115         Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       4,673       7,788         Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Crucigenia sp.	126,158	129,273	
Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       4,673       7,788         Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Dictyosphaerium sp.	31,150	6,230	
Eudorina sp.       -       4,673         Gloeoactinium sp.       9,345       12,460         Golenkinia sp.       4,673       7,788         Conium sp.       -       12,460         Kirchneriella sp.       -       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Elakatothrix sp.	12,460	3,115	
Golenkinia sp.       4,673       7,788         Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115		· -	4,673	
Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Gloeoactinium sp.	9,345	12,460	
Conium sp.       -       12,460         Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Golenkinia sp.	4,673	7,788	
Kirchneriella sp.       126,158       133,945         Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115		-	12,460	
Micractinium sp.       45,168       28,035         Oocystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115		126,158		
Occystis sp.       37,380       23,363         Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Micractinium sp.	45,168		
Pandorina sp.       -       24,920         Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115				
Pediastrum sp.       6,230       52,955         Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115	Pandorina sp.	-	24,920	
Planktosphaeria sp.       45,168       62,300         Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115		6,230		
Polyedriopsis sp.       -       1,558         Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115				
Protococcus sp.       46,725       269,448         Pteromonas sp.       1,558       3,115		•	· ·	
<u>Pteromonas</u> sp. 1,558 3,115		46,725		
	Pyramimonas sp.	-	3,115	

Table 5-4A

#### OCCURRENCE AND ABUNDANCE OF PHYTOPLANKTON TAXA IN SAMPLES COLLECTED AFTER A LARGE RAINFALL EVENT-SEPTEMBER 5, 1979 (AVERAGE NUMBER/LITER)

(continued)

	Indian	Creek Mile
Taxa	4.0	0.0
Chlorophyta (cont)		
Quadrigula sp.	_	6,230
Scenedesmus sp.	685,300	764,733
Schroederia sp.	14,018	7,788
Selenastrum sp.	59,185	77.875
Tetraedron sp.	48,283	43,610
Tetrastrum sp.	12,460	6,230
Treubaria sp.	,	3,115
Unidentified (Treubaria?)	1,558	1,558
Cryptophyta		
Cryptomonas sp.	32,708	68,530
Cyanophyta		
Anabaena sp.	-	28,035
Anacystis sp.	286,580	274,120
Chroococcus sp.	40,495	99,680
Dactylococcopsis sp.	138,618	93,450
Eucapsis sp.	· -	12,460
Gloeothece sp.	-	20,248
Lyngbya sp.	-	3,115
	1,561,323	10,690,680
Oscillatoria sp.	546,683	135,503
Spirulina sp.	17,133	20,248
Euglenophyta		
Euglena sp.	74,760	404,950
Phacus sp.	3,115	3,115
Trachelomonas sp.	6,230	6,230

a. Taxa not found.

Table 5-4B

PHYTOPIANKTON COMPOSITION

REPLICATE ANALYSIS RESULTS AND

CALCULATED MEANS 
RAINFALL EVENT SAMPLING

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ODT TASK S PHYTOPLANKTON LISTING 9153 WEDNESDAY, FEBRUARY 27, 1980

SAM\_LOCKAJ DATE=79-09-05 -----------

TAXON GROUP HEAN
OSCILLATORIA CYANOPHYTA 135502
SPIRULINA CYANOPHYTA 20247
EUGLENA EUGLENDPHYTA 404930
PHACUS EUGLENDPHYTA 31135
TRACHELDHONAS EUGLENDPHYTA 6230

THE PROPERTY OF

DOT TASK 5 PHYTOPLANKTON LISTING

REP_NONEL																																											
DATE=79-09-05	MON	24920	56070	180670	9345	314615	9345	40495	12460	183785	12460	6230	68530	56070	18693	05865	C7867	112140	3115	6230	12460	716450	12460	67279	24920	6230	18690	6230		1186815	9345	3115	3115	15575	000/61	00421	695764	37320	10133095	07171	18690	373800	3118
SAM_LUC	GROUP	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLURDPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLUROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLORDPHYTA	CHLORDPHYTA	CHLURDPHYTA	CHLDROPHYTA	CHLOROPHYTA	CHLORDPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLCROPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHITA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CMRYSOPHYTA	CHKYSOPHTIA	CHKYSOVATIA	CRAPTORATE	C VANCONA VA	CYANDDMYTA	CYANDPHYTA	CYANDRATA	CYANDPHYTA	EUGLENOPHYTA	EUGLENDPHYTA
IVERAINDIAN GREEK RIV_MILE=000.0	TAXON	ACTINASTRUM	ANAISTRUDESHUS	BOTAYOCOCCUS	BRACTEACOCCUS	CHLAMYDONUMS	CHLURELLA	CHLDRDGDVIUN	CHODATELLA	CRUCIGENIA	GLOEDACT INIUM	60LE11K 1'11A	KIRCHMERIELLA	FOI?ILUVYUIW	00045775	PANDURING	PEDIASTRUK	PLANKTOSPHAERIA	POLYEORIOPSIS	PYRAHINGMAS	QUADR I CULA	SCENEDESMUS	SCHRUEDERIA	SELETASTRUM	TETRAEORON	TREUBARIA	C TANACIOPS 1S	CYCLOTELLA	CYMPELLA	MELOSIAA	MAVICULA	NI 12SCHIA	たつに 人 ひの 1 年 4 日	VIEPHBNIC VCCV	A SUBCESSION OF THE PROPERTY O	クダイン・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・ロー・			•	OSCI: LATORIA	2012010S	EUGLENA	PHACUS

- September 1

### DOT TASK 5 PHYTOPLANKTON LISTING

DOT TASK S PHYTOPLANKTON LISTING

9153 WEDNESDAY, FEBRUARY 27, 1980

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12460 12460 12460 1557 132387 37380 6230 45167 46725 1557 685300 9118 6230 1853 72717 7371 7371 34265 126157 31150 12460 9345 4672 126157 63857 45167 14017 SAM\_LOCAL CHICROPHYTAPA CHRYSOPHYTA CHRYSOPHYTA CHRYSOPHYTA CHRYSOPHYTA CHRYSOPHYTA CRYPTOPHYTA CHRYSOPHYTA CHRYSOPHYTA RIV\_MILE=004.0 ANKISTRODESHUS
BUTRYCCCCUS
CHLAMYCOCCUS
CHLORELLA
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CHORATELLA
CLOCIGENIA
ELAKATOTHRIX
GLOEDACTINIUM
KIRCHNENELLA
KIRCHNENELLA DDCYSTIS PEDIASTRUM PLAMKTOSPHAERIA PROTUCECCUS PTEROMONAS DPHIOCYTIUM STEPHANDDISCUS SYNEDRA CRYPIDHONAS ANACYSTIS SELENASTAUM TETRASTAUM TETRASTAUM TECUBARIA CHARACIOPSIS CYMBELLA COLVORYON MELOSIAA MELOSIAA NAVICULA ACT ! NASTRUM SCENEDE SHUS SCHROEDER IA ----- RIVERBINDIAN CREEK TAXON

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DOT TASK 5 PHYTOPLANKTON LISTING

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RIV_MILE=004.0	
RIVERBINDIAN CREEK	
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r. ON	28035 52955	623	4	623	916	426	89	246	869	623	837	230	38	54.1	853	=	22	623	164	26	311	6	623	3,4	Ξ	98	2	311	557	359	115	822	660	17132	198	6070	246	787
GROUP	CHLOROPHYTA	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HL GROPHYT.	HLUROPHYT	HLORDPHYT	HLOZOPHYT	HLOROPHYT	HLCROPHYT	HLOROPHYT	HLOROPHYT	HLUROPHYT	HLUROPHYT	HLOROPHYT	HLUKUPHYT	HLCROPHYT	HLOROPHYT	HLOROPHYT	HRYSOPHYT	HRYSOPHYT	HAYSOMHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	RYPTOPHYT	VANDONAY	VANDDNAV	VANDONAL	YANDPHYT	VANUPHY	VANDPHYT	
TAXON		RACTEACOCCUS	HLAHYDOMDNA	HLORELL	HODATELLA	LOSTERIO	AUC I GENTA	ICTYOSPHA	LAKATOTWAI	DLE'4K 1'41	IRCHNER!	1CAACT [21C	3CYST15	LA-KTUSP	אמזטטטרנע	TERUMONAS	CEVEDESM	CHROEDER 1	ELENASTAU	ETAEDRO	CHMANTHES	HARAC 10P	YYBELLA	ZOAKOOK.	NOMANO	EL 05 14	AVICULA	PHIDCY	I Characon	*NEORA	いいりしゅうと	NACASTIS	HROOCOCCUS	AC TYLOCOC	ER I SHOPED 1	SCILLATOR	7170414	FUSHENA

DOT TASK 5 PHYTOPLANKTON LISTING

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DATE=79-09-05 RE	אסמ	C7864	04804	18690	3115	523320	9345	68530	34265	152635	49840	6230	18590	3115	133945	28035	37380	12460	24920	24920	660380	21805	46725	62300	24920	3115	6230	69660	3115	1962453	12457	21805	140405	34265	214935	105910	10500665	532665	21805	71645	6230	12460
SAM_LDC.AJ	900PD	CHI ORDPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLORDPHYTA	CHLOROPHYTA	CHLORGPHYTA	CHLCRCPHYTA	CHLOROPHYTA	CHLURGPHYTA	CHLJROPHYTA	CHLCROPHYTA	CHLOROPHYTA	CHLCROPHYTA	CHLORDPHYTA	CHLCACPHYTA	CHLURDPHYTA	CHLORDPHYTA	CHLCROPHYTA	CHLCROPMYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLORDPHYTA	CHLOROPHYTA	CHLURUPHYTA	CHRYSOPHYTA	CHRYSDPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CTRYSCPHYIA	CRYPTOPHYTA	CYATIOPHYTA	CYANDPHYTA	CYARIOPHYTA	CYANDPHYTA	CYANOPHYTA	EUGLENUPHYTA	EUGLENDPMYTA	EUGLENDPMYTA
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Table 5-5A

#### OCCURRENCE AND ABUNDANCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED AFTER A LARGE RAINFALL EVENT SEPTEMBER 5, 1979 (AVERAGE NUMBER/METER<sup>3</sup>)

		reek Mile
	4.0	0.0
Rotifera		а
Asplanchna herricki	63	-
A. amphora	104	288
$\underline{\mathbf{A}}$ . spp.	299	_
Bdelloidea sp.		1,434
Beauchampiella sp.	67	26
Brachionus angularis	2,366	1,503
B. bennini	_	108
B. bidentata	83	1,092
B. budapestinensis	42	204
B. calyciflorus	1,140	5,514
B. caudatus	12,309	3,553
B. havanaensis	241	51
B. nilsoni	21	-
B. quadridentatus	745	3,819
B. urceolaris	-	159
Cephalodella sp.	46	-
Conochiloides sp.	108	240
Conochilus hippocrepis	279	<b>9</b> 75
C. unicornis	-	88
Epiphanes macroura	279	200
Euchlanis sp.	67	108
Filinia limnetica	-	31
F. longiseta	212	204
Hexartha sp.	_	164
Keliicottia bostoniensis	42	-
Keratella cochlearis	21	-
Lecane spp.	1,244	1,437
L. leontina		26
Monostyla sp.	137	88
M. bulla	_	144
M. ventralis	-	62
Platyias patulus	420	2,742
P. quadricornis	42	, 77
Polyartha sp.	42	_
Synchaeta sp.	104	-
S. stylata	~	102
Testudinella sp.	104	482
Trichocerca sp.	92	31
Trichotria sp.	21	31
Contracted Rotifera	325	262
		-0-

Table 5-5A

#### OCCURRENCE AND ABUNDANCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED AFTER A LARGE RAINFALL EVENT SEPTEMBER 5, 1979 (AVERAGE NUMBER/METER<sup>3</sup>)

(continued)

		Creek Mile
	4.0	0.0
Cladocera		
Bosmina longirostris	183	661
Bosminopsis sp.	-	358
<pre>C. spp. (immature)</pre>	-	26
Diaphanosoma leuchtenbergianum	-	133
M. spp. (immature)	-	51
Copepoda		
Calanoid (immature)	21	26
Cyclopoid (immature)	591	970
Tropocyclops prasinus	-	51
Nauplii	3,360	4,095

a. Taxa not found.

Table 5-5B

ZOOPLANKTON COMPOSITION

REPLICATE ANALYSIS RESULTS AND

CALCULATED MEANS -

RAINFALL EVENT SAMPLING

٠,

SEPTEMBER 5. 1979

R= IN0 I AN	CREEK	YEAR= 79	RIV_MILE=000.0	SAM_LOC=AJ	00 H Z W	REP_NU
	TAXON			GHOUP	NUN	
	805#1NA	LONGIROSTRIS	818	CL ADOCE PA	164	
	a	.S15 SP.		ADOCER	407	
	CERIODAPHNIA			Œ	51	
	DIAPHARIOSOMA		LEUCHTENBERGIANUM	Œ	502	
	HOILA IMM.			CL ADOCERA	102	
	CAL ANOIDA	A IMM.		COPEPCDA	51	
	CYCLOPOIDA	IDA IMM.		COPEPODA	164	
	NAUPL 11			COPEPODA	3056	
	TROPOCYCLOPS	CLOPS PRASIMUS	5041	COPEPODA	102	
	ASPL ANCHNA	HAMPHOR	4	POTIFEPA	504	
	BDELLOIDEA	)€ A		POTIFERA	764	
	BEUCHAMP IELLA	JELLA SP.		ROTIFEPA	51	
	BPACH JONUS	VUS ANGULAPI	P15	ROTIFERA	1273	
	<b>BPACHIONUS</b>			ROTIFEHA	153	
	RPACHIONUS		ATA	ROTIFERA	204	
	RRACHIONUS		BUDAPESTINENSIS	ROTIFERA	407	
	BPACHIONUS		CALYCIFLORUS	ROTIFERA	5398	
	BPACH 10NUS		o.s	ROTIFERA	4014	
	BPACH 10NUS		ENSIS	ROTIFERA	102	
	BPACH 10NUS		QUADPIDENTATUS	ROTIFERA	3616	
	BPACHIONUS	VUS URCEOLARIS	ARIS	ROTIFERA	255	
	CONOCHIL	0		ROTIFEPA	356	
	CONCCHILUS		REPIS	ROTIFERA	713	
	CONCCHILUS		SIV	7	51	
	CONTRACTED		40	5	153	
	EPIPHANES		SO	ROTIFERA	153	
	<b>EUCHLANIS</b>	S.		ROTIFEPA	153	
	FILINIA	0		ROTIFEHA	407	
	r	A SP.		ROTIFEPA	504	
	LECANE 1	LEONTINA		ROTIFERA	51	
	LECANE S	SP.		ROTIFERA	1984	
	MONOSTYLA			ROTIFERA	102	
	PONOSTYLA	LA SP.		ROTIFERA	51	
	PLATYIAS			ROTIFERA	3565	
	PLATYIAS	0	Slag	ROTIFERA	153	
	SYNCHAET	A STY		ROTIFERA	204	
	TESTUDINELLA	NELLA SP.		ROTIFERA	407	

DET TASK 5 ZOOPLANKTON CALCULATIONS SEPTEMBER 5+ 1975

MN=09 ----

POSMILA LONGINOSTRIS  ROSMINA LONGINOSTRIS  ROSMINADA INA  ROSMINADA INA  ROSMINADA INA  ROSMINADA INA  ROSMINADA INA  ROMANDICA INA  CARADURA INA  ROSMINADA  ROMANDICA INA  ROMANDICE INA  ROMA	R#79 RIVEH=INCIAN CHEEK RIV_MILE	#000.0 SAM_	AM_LCC=AJ	
SWITTAL LENGINGSTRIS SWITTAL LENGINGSTRIS SWITTAL LENGINGSTRIS SWITTAL SP. SCHOOLS SP. SCH	A	∩O <del>u</del>	43 (4)	
ANAMANS SALE LEUCHTENBERGIANUM CLAGOGERA 13 ANAMANS SALE LEUCHTENBERGIANUM CLAGOGERA 13 ANAMANS SALE LEUCHTENBERGIANUM CLAGOGERA 13 ANAMANS SALE LEUCHTENBERGIANUM CCAPEGORA 13 ANAMANS SALEN SALE LA SPANCE ANAMANS SALEN SALE ANAMANS SALE AN	SMINA LONGINGSINI	LASOCEP	40.0	
ACHENOSORA LEUCHTENBERGIANUM CLAGOCEPA  INA IMA CLADOLOS IMA CLADOLOS IMA CASILUS SP. CONCEDA IMA CASILUS CALCANIS CASILUS CALCANIS CASILUS CA	FIDEAPHAIA IMM	LACOCEP	nή	
INA IMA.  LAYDICA IMA.  COMPRODA  CO	APMANUSOMA LEUCHTENBERG	LACOCEP	•	
COPERON CONTROL INT.  CLEANING INT.  CLOCKLODE INT.  CCCERCOL ASSISTANCE CONTROL AND CONTR	17.4 LT.	LACOCER	us:	
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POLITION AND TOTAL			<u>ب</u> د	
ELLUISEA  JUCAUNIELLA SP.  JULINA VENTALIS  JULINA VENTAL	PLANCES ANDEODA	0 T 1 P F U	n a	
UCCHUNG PERMANENT POLIFERA 150 ACHIONAS CARACTERS POLIFERA 150 ACHIONAS	FLLOIDEA	011669	, (m)	
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ACHIONS PENNING ACHIONUS PENNING ACHIONUS CALVEIRLANDIS ACHIONUS	ACHIONUS ANGLEANI	OTIFER	C	
ACHIONS PICENTALA ACHIONAS CAUCATOS ACHIONAS MACDODOS AND ACTOR AC	ACHIONUS PENNINI	#33I10	۲.	
ACHIONS BUTATESTIVENSIS POTIFERA SOLUTIONS CALTIFERA SOLUTIONS CALCIFERA SOLUTIONS CALCIFERA SOLUTIONS CALCIFERA SOLUTIONS CAUGATOS POTIFERA SOLUTIONS CAUGATOS POTIFERA SOLUTIONS CAUGATOS CAUGATOS POTIFERA SOLUTIONS PROPERTY SOLUTIONS S	ACHIOTOS PICETIATA	011560	c.	
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MOCHIUS HIPPOCREPIS MOCHIUS UNICONNIS MOCHIUS UNICONNIS MOCHIUS UNICONNIS MOCHIUS UNICONNIS MACTED ROTIFERA POTIFERA POT	NOCHILOILES SP.	01156		
ACCTILUS UNICOANIS NIGACIEUS CONICOANIS NIGACIEUS CONICEDA NIGACE ACPOUDUS CHLANIS SP. LINIA LIMPETICA LINIA LIMPETICA LINIA LIMPETICA LINIA LIMPETICA CAME LEGATIMA CAME LEGATIMA CAME SP. CAME	MOCHILUS HIPPOCREP!	OTIFEA	ř	
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LINIA LIMPETICA POTIFERA IN LINIA LIMPETICA POTIFERA IN ANTIA COGISETA POTIFERA IN ANTIA COGISETA POTIFERA IN ANTIA COGISETA POTIFERA IN ANTIA SPULLA POTIFERA IN ANTIA SPULLA POTIFERA IN ANTIA SPULLA POTIFERA IN ANTIA SPULLA POTIFERA IN ANTIA SPULDINELIS POTIFERA IN ANTIFERA	IPHANES MACPOURU	OTIFEP	Ċ	
LINIA LIMPETICA  ALMIA LOGISETA  LIVIA LOGISETA  CATE LEGATINA  CATE LEGATINA  CATE SP.  CATE SP	CFLANIS SP.	01166	_	
LINTER LEGISEIA POTTEEPA 20 LINTER LEGISTIA CANE LEGISTIA CANE SP.	TAIA LIMMETIC	OTIFER	<b>~</b>	
CATE LEGATINA CATE SP. CATE SP. CATE SP. CATE SP. CATE SP. CATE BULLA CATE SP. CATE	**************************************	0.175	0	
CANE SP.  ***OSIYLA BULLA  ***OSIYLA	1	71111	ėñ	
OSTYLA BULLA NOSTYLA SP. NOSTYLA SP. TILINA VENTHALIS ATTILINA VENTHALIS ATTILINA VENTHALIS ATTILINA VENTHALIS ATTILINA VENTHALIS ATTILINA VENTHALIS ROTIFERA 10 STUDINELLA SP. ROTIFERA 48 ICHOCERCA SP. ROTIFERA 3 ICHOTRIA SP.	CANE SP.	7 1 1 1 0	7	
MOSIYLA SP.  TILINA VENTHALIS ATTIAS PATULUS ATTIAS CUADHICOPNIS ROTIFERA ATTIAS CUADHICOPNIS ROTIFERA ACHOETA ST. ROTIFERA BOTIFERA BOTIFFRA BOTIF	*OSTYLA BULL	OTIFFR		
ATTLINA VENTRALIS ATTIAS PATULUS ATTIAS GUADHICORNIS ROTIFERA ACHETA STYLATA ROTIFERA 10 STUDINELLA SP. ROTIFERA 3 ICHOTERA SP.	NOSTYLA SP.	OTIFER	Œ	
ATYIAS PATULUS ATYIAS GUADHICGANIS ROTIFERA 7. CHAETA STYLATA POTIFERA 10. STUDINELLA SP. ROTIFERA 68. ICHOCERCA SP. ROTIFERA 3. ICHOTRIA SP. ROTIFERA 3.	TILINA VENTRALI	OTIFER		
ATTIAS GUADATCORNIS ROTIFERA 7. CYAETA STOCINETA BOUTIERA 10. STOCINETA STOCINETA SA CHOCERCA SP. ROTIFERA 3. ICHOTRIA SP.	ATYIAS PATULUS	OTIFER	2	
VCAETA POTIFERA 10. STUDINELLA SP. ROTIFERA 46. STUDINELRA SP. ROTIFERA 3	ALTIAS GUADAICORNI	OTIFER	~	
SIUDINELLA SP. ROTIFERA 48. ICHOCERCA SP. ROTIFERA 3 ICHOTRIA SP. ROTIFERA 3	NCHAETA STYLAT	OTIFER	0	
ICHOTRIA SP. ROTIFERA 3	STUDINELLA SP.	OTIFER	00	
ICHUINIA SP.	CHOCKACA SP	DTIFER		
	ICHOIMIA SI	OT JFER		

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SEPTEMBER 5. 1979

REINDIAN CREEK	CREEK	YEAR=79	œ	RIV_MILE=000.0	0.0	SAM_LOC=AJ	00 H N H	REP_NUM=
	TAKON					GHOUP	J N	
	BOSMINA	BOSMINA LONGIROSTRIS	4	vo		CLACOCEPA	557	
	1011-S08	BOSVINOPSIS SP.				CLADOCERA	309	
	OI APHAN	DSOMA LEUC	GHI	DIAPHANDSOMA LEUCHTENBERGIANUM	z	CLACOCERA	29	
	CYCLOPO					COPEPODA	1175	
	ERGASILUS	us sp.				COPEPODA	29	
	NAUPLII					COPEPODA	5134	
	<b>ASPLANCHNA</b>	HNA AMPHOPA	¥ a			ROTIFERA	371	
	B0ELL010E4	0E 4				POTIFERA	2103	
	BRACHIONUS		AP I	ď		ROTIFERA	1732	
	BRACHIONUS		<del></del>			ROTIFERA	62	
	RPACH 10%US		TAT	4		ROTIFERA	1979	
	BRACHIONUS		JF.	SOR05		ROTIFEHA	6295	
	8PACH 10NUS	NUS CAUDATUS	105			ROTIFEPA	3031	
	BPACHIONUS		106	<b>QUADRIDENTATUS</b>		ROTIFERA	4021	
	RPACH TONUS	NUS URCEOLARIS	AR	15		POTIFERA	29	
	CONCCHI					ROTIFERA	124	
	CONDCHILUS		GRE	SId		POTIFERA	1237	
	CONDCHILUS		ž	'n		ROTIFERA	124	
	CONTHACTED	TEO POTIFERA	FRA			POTIFERA	37.1	
	<b>EPIPHANES</b>	ES MACROURUS	ŠČŠ			ROTIFERA	247	
	<b>EUCHLANIS</b>	15 SP.				ROTIFERA	29	
	FILINIA	FILIWIA LIMNETICA	•			ROTIFERA	62	
	HEXARTHRA	RA SP.				ROTIFEPA	124	
	LECANE SP.	SP.				ROTIFERA	990	
	MONOSTYLA					POTIFERA	186	
	MONOSTYLA	LA SP.				POTIFERA	124	
	MYTILINA	A VENTRALIS	SI			ROTIFERA	124	
	PLATYIAS	PAT				ROTIFERA	1918	
	TESTUDINELLA	NELLA SP.				ROTIFERA	557	
	TRICHOCERCA	ERCA SP.				ROTIFERA	29	
	TRICHOTRIA	RIA SP.				POTIFERA	29	

5/=	HIVEP-INDIAN CREEK RIV_MIL	RIV_MILE=004.0	SAM_LOC=AJ
	1 a a C P.	d00a9	ME 4.2
	VIVA LONGI	ه نيآ	183
	**** *********************************	2 0	1 0
	ACP 11	ر د	טארי טארי
	ALCHIA AMPHO	الله و	104
	ASPLANCHMA HEPRICKI	Œ	29
	ASPLANCHNA SP.	4	22A
	BENCHAMPIFILA SP.	1	46
	PRACHICAUS ANDULARIS	a L	2346
		ŭ	er er
	SISVENICACE BOTAPESTIMENSIS	a E	1.5
	$\gtrsim$	a u	1139
	HARCHIONUS CAMBATUS	a	12309
	BEACHICHUS HAVATAETSIS	a	241
	BEACHIONUS NILSONI	ä	≂
	PRACHIUMUS QUADHIDENTATUS	ď	764
	CEPHALODELLA SP.	a B	£,3
	CONDCHILUTOES SP.	G.	108
	CONCEMILUS HIPPOCREPIS	d i	519
	CONTRACTED POTIFERA	a U	354
	EPIPHANES MACROUPUS	3	519
	EUCHLANIS SP.		64
		9	212
	KELLICOTTIA BOSTONIENSIS	ă	7
	REGATELLA COCHLEARIS		2
	LECASE SP.	Œ.	1243
	PONOSTYLA SP.	ب.	137
	PLATYIAS PATULUS	ă	024
	PLATYIAS QUADRICORNIS	·	~
	POLYAHTHMA SP.	E 19	7
	SYNCHAETA SP.	14	104
	TESTUDIALLA SP.	E E	
	TRICHOCERCA SP.	e i	7
	TRICHOTRIA SP.		

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BOSMINA LONGIROSTRIS  CYCLOPOIDA IMM.  BOSMINA LONGIROSTRIS  CYCLOPOIDA IMM.  ASPLANCHNA SP.  BEUCHAMPIELLA SP.  BRACHIONUS ANGULARIS  BRACHIONUS CAUVOLATIS  BRACHIONUS CAUVANAENSIS  BRACHIONUS CAUVANAENSIS  BRACHIONUS GAUDARIUS  BRACHIONUS GAUDARIUS  BRACHIONUS GAUDARIUS  BRACHIONUS GAUDARIUS  BRACHIONUS GAUDARIUS  BOTTIFERA  STATIFERA  STATIFERA  BRACHIONUS GAUDARIUS  BOTTIFERA  STATIFERA  BRACHIONUS MACROURUS  BOTTIFERA  STATIFERA  BRACHIONIS SP.  BOTTIFERA  BRACHIONIS MACROURUS  BRACHIONIS MACROURUS  BRACHIONIS MACROURUS  BRACHIONIS MACROURUS  BRACHIFERA  BRACHIONIS MACROURUS  BRACHIFERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIONIS MACROURUS  BRACHIFERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIFERA  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRACHIONIS MACROURUS  BRACHIERA  BRA	Alversindian CREEK	CREEK	YEAR= 79	RIV_HILE=004.0		SAF_LOC=AJ	60 . NA	
S CLADACERA COPEPODA COPEPDA COPEPDA COPEPDA COPEPDA COPEPDA COPEPDA COPEPDA COPEPDA COPEPDA COPEDA COPE		TAXON			GPOOP		NON	
COPEPODA COREPODA COREPODA POTIFERA SUS POTIFERA NIATUS POTIFERA POTIFERA POTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		80SH1	MA LONGIR	STRIS	CLADNCE	4.	366	
COPEPODA ROTIFERA ROTIFERA ORUS ROTIFERA SIS ROTIFERA NIATUS ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		CYCLO	POIDA INH.		COPEPOD		049	
S ROTIFERA S ROTIFERA S ROTIFERA S ROTIFERA S ROTIFERA NATUS ROTIFERA		NAUPL	=		COPEP00	_	390	
S ROTIFERA ORUS ROTIFERA SIS ROTIFERA SIS ROTIFERA NIATUS ROTIFERA		ASPLA	WCHNA SP.		ROTIFER	_	457	
SS RCIFERA  ORUS ROTIFERA  NIATUS ROTIFERA		BEUCH	AMP SELLA S		ROTIFER	_	16	
ORUS ROTIFERA SIS ROTIFERA NIATUS ROTIFERA NIATUS ROTIFERA		BPACH	IONUS ANGI	JLARIS	PCT IFEP	m	567	
SIS NIATUS ROTIFERA NIATUS ROTIFERA		BRACH	TONUS CALT	CIFLORUS	ROTIFER!	_	823	
NIS ROTIFERA NIATUS ROTIFERA		BPACH	TONUS CAUC	ATU5	ROTIFER!	97	463	
NTATUS ROTIFERA PIS ROTIFERA PIS ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		BRACH	IONUS HAVI	INAENSIS	ROTIFER!	_	274	
PIS ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		BPACH	IONUS QUAC	PIDENTATUS	ROT IFER	•	366	
PIS ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		CEPHAL	.NDELLA SF	•	ROTIFER!	-	16	
PIS ROIIFERA ROIIFERA ROIIFERA ROIIFERA ROIIFERA ROIIFERA ROIIFERA ROIIFERA		CONOC	+1L010ES	d.	ROTIFEH	_	5	
ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		CONOC	ILUS HIPF	OCREP1S	ROTIFER	_	183	
ACTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		CONTE	ACTED ROT	FERA	ROTIFER	•	274	
ROTIFERA ROTIFERA ROTIFERA ROTIFERA ROTIFERA		EPIPHI	INES MACRO	JURUS	ROTIFER		183	
SETA ROTIFERA ROTIFERA ROTIFERA ULUS ROTIFERA SP.		EUCHL	ANIS SP.		ROTIFER	_	16	
ROTIFERA ROTIFERA ULUS ROTIFERA SP.		FILIN	IA LONGISE	:TA	ROTIFER	_	91	
AOTIFERA DLUS AOTIFERA SP. AOTIFERA		LECAN	SP.		ROTIFER	_	280	
S AOTIFERA ROTIFERA		NONON	IYLA SP.		ROTIFER	•	274	
ROTIFERA		PLATY	IAS PATULI	S	ROTIFER	•	549	
		TRICH	DCERCA SP.		ROTIFER	_	183	

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**************************************		YEAR= 79	RIV_MILE=004.0	SAM_LOC=AJ	2.00 m
	TAKON			GROUP	NO.
	CALAN	CALANOICA IMM.		COPEFODA	24
	נגנרס	CYCLOPOIDA 1MM.		COPEPODA	541
	NAUPL 1 I	11			2330
	A SPL A	ASPLANCHNA AMPHODA	0PA	ROTIFERA	204
	4SPLA	ASPLANCHNA HERRICKI	10x1	ROTIFEPA	125
	BFUCE	BFUCHALPIELLA SP.	ď	GOT I FERA	75
	40 <b>7</b> 6	BRACHIONUS ANGU	ANGULARIS	FOTIFERA	1165
	FPACH	ERACHIONUS BIDE	BIDENTATA	FOTIFFRA	166
	BPACH	BPACHIONUS BUDA	BUDAPESTINENSIS	ROTIFERA	63
	69ACH		CALYCIFLORUS		1456
	BPACH	BRACHIONUS CAUD	CAUCATUS	ROTIFERA	8155
	HD 4 CH	RPACHIONUS MAVA	HAVAMAENSIS	FOTIFEPA	208
	BPACH	BPACHIONUS NILSONI	1 ~0	ROTIFERA	24
	PPACH	PRACHIONUS QUADRIDENTATUS	PIDENTATUS	ROTIFERA	1123
	0000	CONOCHILOICES SP.	ď	GOTIFERA	125
	00400	CONOCHILUS HIPPOCREPIS	OCREP 1S	SCT IF ERA	375
	CONTR	CONTRACTED ROTIFERA	FERA	POTIFERA	375
	Hd1d3	PIPHANES MACROURUS	URUS	COTIFERA	375
	EUCHL	EUCHLANIS SP.		ROTIFERA	42
	71C18	FILINIA LONGISETA	ΤA	<b>PCTIFERA</b>	333
	KELL!	RELLICOTTIA BOSTONIENSIS	TONIENSIS	ROTIFERA	83
	KERAT	KERATELLA COCHLEARIS	EARIS	ROTIFERA	7
	LECAN	LECANE SP.		POTIFERA	1207
	PLATY	PLATYIAS PATULUS	Š	GOTIFEPA	291
	PLATY	PLATYIAS QUADRICORNIS	CORNIS	ROTIFERA	83
	POLYA	POLYARTHRA SP.		ROTIFERA	83
	SYNCE	SYNCHAETA SP.		ROTIFERA	208
	TESTU	FESTUDINELLA SP.		POTIFERA	208
	18ICE	RICHOTRIA SP.		ROTIFERA	42

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Table 5-6

IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

DURING LATE SUMMER/EARLY FALL

STATION	<u>DATE</u>	TIME	DEPTH (m)	TEMP	DO mg/1	CONDUCTIVITY  umhos/cm	рН	TOTAL ALKALINITY mg/1
TRM 350.0 LOB	9/27/79	1555	0.3	22.5	7.9	175	7.6	<del>-</del>
(Secchi disk re			0.5	22.5	7.9	175	7.6	17
(5000112 011511 1		,	1.0	22.5	7.9	175	7.6	<del>-</del>
			1.5	22.5	7.9	175	7.6	-
			2.0	22.5	7.9	175	7.6	-
			2.5	22.5	7.9	175	7.6	-
			3.0	22.5	7.9	175	7.6	-
			3.5	22.5	7.9	175	7.6	-
			4.0	22.5	7.9	175	7.6	-
			4.5	22.5	7.9	175	7.6	-
			5.0	22.5	7.9	175	7.6	-
			5.5	22.5	7.9	175	7.6	<del></del>
			6.0	22.5	7.9	175	7.6	-
TRM 350.0 MC	9/27/79	1415	0.3	22.5	8.0	175	7.5	-
(Secchi disk re			0.5	22.5	7.8	175	7.5	17
•	Ū	•	1.0	22.5	7.8	175	7.5	-
			1.5	22.5	7.8	175	7.5	-
			2.0	22.5	7.8	175	7.5	-
			2.5	22.5	7.8	175	7.5	-
			3.0	22.5	7.8	175	7.5	-
			3.5	22.5	7.7	175	7.5	-
			4.0	22.5	7.7	175	7.5	-
			4.5	22.5	7.7	175	7.5	-
			5.0	22.5	7.7	175	7.5	-
TRM 350.0 ROB	9/27/79	1145	0.3	23.0	7.4	180	7.6	-
(Secchi disk re	eading - l	.25 m)	0.5	23.0	7.4	180	7.6	18
			1.0	22.5	7.4	180	7.6	-
			1.5	22.5	7.4	180	7.6	-
			2.0	22.5	7.4	180	7.6	-
			2.5	22.5	7.4	180	7.6	-
			3.0 3.5	22.5 22.5	7.4	180	7.6	<u>-</u>
			4.0	22.5	7.4 7.4	180 180	7.6 7.6	-
			4.5	22.5	7.4	180	7.6	_
			5.0	22.5	7.4	180	7.6	-
			5.5	22.5	7.4	180	7.6	-
			6.0	22.5	7.4	180	7.6	-
			6.5	22.5	7.4	180	7.6	-
			7.0	22.5	7.4	180	7.6	-
			7.5	22.5	7.4	180	7.6	-

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Table 5-6

IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

DURING LATE SUMMER/EARLY FALL
(continued)

STATION	DATE	TIME	DEPTH (m)	TEMP	DO mg/1	CONDUCTIVITY  umhos/cm	<u>рН</u>	TOTAL ALKALINITY mg/1
TRM 350.0 ROB	9/27/79	1145	8.0	22.5	7.4	180	7.5	-
(cont)			8.5	22.5	7.4	180	7.5	-
			9.0	22.5	7.4	180	7.5	-
			9.5	22.5	7.4	180	7.5	-
			10.0	22.5	7.4	180	7.5	-
			10.5	22.5	7.4	180	7.5	-
			11.0	22.5	7.4	180	7.5	-
			11.5	22.5	7.4	180	7.5	-
			12.0	22.5	7.4	180	7.5	-
			12.5	22.5	7.4	180	7.5 7.5	-
			13.0 13.5	22.5 22.5	7.4 7.4	180 180	7.5	- -
			14.0	22.5	7.4	180	7.5	<u>-</u>
			14.5	22.5	7.4	180	7.5	<del>-</del>
			15.0	22.5	7.4	180	7.5	<b>-</b>
			15.5	22.5	7.4	180	7.5	_
			16.0	22.5	7.4	180	7.5	_
			16.5	22.5	7.4	180	7.5	•
			17.0	22.5	7.4	180	7.5	-
			• • • •		• • •			
TRM 345.2 LOB	9/27/79	1350	0.5	24.0	8.3	200	7.3	18
(Secchi disk r		.O m)	1.0	24.0	8.3	200	7.3	-
•	_	•	1.5	24.0	8.2	200	7.2	_
			2.0	24.0	8.2	200	7.2	-
			2.5	24.0	8.1	200	1.2	-
*			3.0	24.0	8.0	200	7.4	-
			3.5	24.0	8.0	200	7.4	-
			4.0	24.0	8.0	200	7.6	-
			4.5	24.0	8.0	200	7.6	-
			5.0	24.0	7.9	200	7.7	-
			5.5	23.0	7.9	200	7.7	-
TRM 345.2 MID	9/27/79	1035	0.5	24.0	8.2	200	7.6	_
(Secchi disk r			1.0	24.0	8.1	200	7.6	<del>-</del>
(Seccial disk in	eauling - 1	• • 11.,	1.5	24.0	8.0	200	7.6	<del>-</del>
			2.0	24.0	8.0	200	7.6	_
			2.5	24.0	8.0	200	7.6	-
			3.0	24.0	7.9	200	7.6	-
			3.5	24.5	7.9	200	7.6	-
			4.0	24.5	7.9	200	7.6	-
			4.5	24.0	7.9	200	7.6	_
			5.0	24.0	7.9	200	7.6	-
			5.5	24.0	7.9	200	7.5	•
			6.0	24.0	7.9	200	7.5	•

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IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

DURING LATE SUMMER/EARLY FALL

(continued)

STATION	DATE	TIME	DEPTH (m)	TEMP C	DO mg/1	CONDUCTIVITY pmhos/cm	<u>pH</u>	TOTAL ALKALINITY mg/l
TRM 345.2 ROB	9/27/79	1245	0.5	24.0	8.5	200	6.9	25
(Secchi disk r			1.0	24.0	8.3	200	6.9	-
(00000111 015% 1		, 0,	1.5	23.0	8.2	200	6.8	-
			2.0	23.0	8.1	200	7.0	-
			2.5	23.0	8.0	200	7.0	-
			3.0	23.0	8.0	200	7.2	-
•			3.5	23.0	7.9	200	7.4	-
			4.0	23.0	7.9	200	7.6	-
			4.5	23.0	7.9	200	7.6	-
			5.0	23.0	7.9	200	7.6	-
			5.5	23.0	7.9	200	7.6	-
HSBM 5.9	9/25/79	1615	0.3	21.0	1.4	400	7.0	46
(Secchi disk r	eading - 1.	.25 m)	0.5	21.0	1.3	400	7.0	-
			1.0	21.0	1.3	400	7.0	-
HSBM 5.37	9/25/79	1400	0.3	21.0	1.4	400	7.1	45
(Secchi disk r	eading - l.	.25 m)	0.5	21.0	1.4	400	7.1	-
			1.0	21.0	1.4	400	7.1	-
HSBM 2.4	9/24/79	1000	0.3	21.5	4.6	500	7.2	30
(Secchi disk r	eading - 0.	.4 m)	0.5	21.0	4.0	500	7.2	. <del>-</del>
			1.0	21.0	4.0	500	7.2	-
			1.5	21.0	3.8	500	7.2	-
HSBM 1.3	9/24/79		0.3	23.0	18.0	300	8.2	41
(Secchi disk r	eading - 0.	.3 m)	0.5	23.0	13.8	300	8.1	-
			1.0	22.5	9.4	300	7.5	-
			1.5	22.0	6.2	300	7.3	-
			2.0	21.5	4.7	300	7.2	-
HSBM 0.0	9/25/79	0930	0.3	21.0	8.7	320	7.5	38
(Secchi disk r	eading - 0.	4 m)	0.5	20.5	8.6	320	7.5	-
	-		1.0	20.5	8.5	320	7.4	-
			1.5	20.5	8.1	320	7.4	-
			2.0	20.5	8.2	320	7.4	-
ICM 4.0	9/25/79	1025	0.5	22.0	13.0	360	8.1	39
(Secchi disk re	eading - 0.	25 m)	1.0	22.0	13.0	360	8.2	-
			1.5	22.0	13.0	360	8.2	-

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Table 5-6

IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

DURING LATE SUMMER/FARLY FALL
(continued)

STATION	DATE	TIME	DEPTH (m)	TEMP	DO mg/l	CONDUCTIVITY umhos/cm	рН	TOTAL ALKALINITY mg/1
ICM 0.0	9/24/79	1500	0.1	22.5	7.1	240	7.3	35
(Secchi disk			1.0	22.5	6.9	230	7.2	~
·	-		1.5	22.5	6.9	230	7.2	-
			2.0	22.5	6.9	230	7.3	~
			2.5	22.5	6.9	230	7.3	-
			3.0	22.5	6.8	230	7.3	•
			3.5	22.5	6.9	230	7.1	~
			4.0	22.5	6.9	230	7.3	-
			4.5	22.5	6.9	230	7.1	-
			5.0	22.5	6.7	230	7.1	-
			5.5	22.5	6.6	230	7.0	-
			6.0	22.5	6.7	230	7.0	-
			6.5	22.5	6.7	230	7.0	_
BFCM 1.2	9/24/7 <b>9</b>	1200	0.1	23.0	7.8	280	6.0	45
(Secchi disk	reading - 0	.5 m)	0.5	22.0	7.1	280	5.9	-
			1.0	22.0	6.9	280	5.9	-
			1.5	22.0	8.4	240	6.5	-
TRM 315.0 LOB	9/25/79	1717	0.1	24.0	9.0	220	6.5	20
(Secchi disk	reading - 0.	.5 m)	1.0	24.0	9.0	220	6.5	-
			1.5	24.0	9.0	220	6.6	-
			2.0	24.0	9.0	220	6.6	-
			2.5	24.0	9.0	220	6.6	-
			3.0	24.0	9.0	220	6.6	-
			3.5	24.0	9.0	220	6.6	-
			4.0	24.0	9.0	220	6.6	-
			4.5	24.0	9.0	220	6.6	-
			5.0 5.5	24.0 24.0	9.0 9.0	220 220	6.8 6.8	- -
TRM 315.0 MC	9/25/79	1529	0.5	24.0	9.2	220	6.9	22
(Secchi disk			1.0	24.0	9.1	220	6.9	-
(OCCCIII GIOR		, , , , ,	1.5	24.0	9.1	220	7.0	-
			2.0	24.0	9.1	220	7.0	-
			2.5	24.0	9.1	220	6.9	_
			3.0	24.0	9.0	220	6.9	_
			3.5	24.0	9.0	220	6.9	-
			4.0	24.0	9.0	220	6.9	-
			4.5	24.0	9.0	220	6.9	-
			5.0	24.0	9.0	220	6.8	-
			5.5	24.0	9.0	220	6.8	-
			6.0	24.0	9.0	220	6.8	-
			6.5	24.0	9.0	220	6.8	-

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Table 5-6

IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

DURING LATE SUMMER, FALL (continued)

STATION	DATE	T1ME	DEPTH (m)	TEMP C	DO mg/1	CONDUCTIVITY  umhos/cm	<u>pH</u>	TOTAL ALKALINITY mg/1
TRM 315.0 ROB	9/25/79	1320	0.5	24.0	9.9	220	6.4	20
(Secchi disk r			1.0	25.0	9.6	220	6.4	-
(0000111 11111 1		,	1.5	25.0	9.6	220	6.3	_
			2.0	24.5	9.5	220	6.3	-
			2.5	24.5	9.4	220	6.5	-
			3.0	24.5	9.4	220	6.5	-
			3.5	24.0	9.3	220	6.5	-
			4.0	24.0	9.3	220	6.5	-
			4.5	23.0	9.2	220	6.5	-
			5.0	23.0	9.2	220	6.5	-
			5.5	23.0	9.1	220	6.5	-
			6.0	23.0	9.1	220	6.5	-
			6.5	23.0	9.1	220	6.5	-
TRM 289.9 LOB	9/28/79	1400	0.5	22.0	7.9	210	6.8	-
(Secchi disk r	eading not	taken)	1.0	22.5	7.7	210	6.8	19
			1.5	22.5	7.6	210	6.8	-
			2.0	22.5	7.6	210	6.8	-
			2.5	22.5	7.6	210	6.8	-
			3.0	22.0	7.5	210	6.8	-
			3.5	22.0	7.6	210	6.8	-
			4.0	22.0	7.5	210	6.8	-
TRM 289.9 MC	9/28/79	1010	0.5	22.0	8.4	210	6.8	<u>-</u>
(Secchi disk r	eading not	taken)	1.0	22.0	8.2	210	6.8	36
			1.5	22.0	8.2	210	6.8	_
			2.0	23.0	8.1	210	6.8	-
			2.5	23.0	8.0	210	6.8	-
			3.0	23.0	8.0	210	6.8	-
			3.5	23.0	8.0	210	6.8	-
			4.0	23.0	8.0	210	6.8	-
			4.5	23.0	7.9	210	6.8	-
			5.0	23.0	7.9	210	6.8	-
			5.5	22.5	7.9	210	6.8	-
			6.0	22.0	7.8	210	6.8	-
			6.5	22.0	7.8	210	6.8	-

Table 5-6

IN SITU AND FIELD DETERMINED WATER QUALITY PARAMETERS

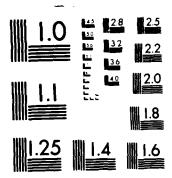
DURING LATE SUMMER/EARLY FALL

(continued)

STATION	DATE	TIME	DEPTH (m)	TEMP	рH	TOTAL ALKALINITY mg/1		
TRM 289.9 ROB	9/28/79	0915	0.5	22.0	9.1	180	6.9	-
(Secchi disk re	eading - 1	.0 m)	1.0	22.5	8.5	180	6.9	18
	_		1.5	22.5	8.3	180	6.9	-
			2.0	22.5	8.2	180	6.9	-
			2.5	22.5	8.2	180	6.9	-
			3.0	22.5	8.1	180	6.9	-
			3.5	22.5	8.0	180	6.9	-
			4.0	22.5	8.0	190	6.9	-

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Table 5-7B

PHYTOPLANKTON COMPOSITION

REPLICATE ANALYSIS RESULTS AND

CALCULATED MEANS 
LATE SUMMER/EARLY FALL SAMPLING

DATER79-09-24 generatementalistering 

MEAN	440048		200	179 179	486	311	188	245	95	736	3425	1776	275	1175	934	2:	648 <b>8</b>	13701	9	1521	920	39	311	ត	1908	<b>:</b> -	::	6	473	4 4	311	6	311	265	4013	207	7990	•	1245	110
GROUP	CHLOROPHYTA CHLOROPHYTA CHLOROPHYTA	H OROPHYT	H OROPHY	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLDROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT.		HLOROPHY.	HLOROPHYT	HLOROPHYT		HLOROPHYT	HLOROPHYT	HLOROPHYT	HOROPHYT.	CHLOROPHYIA	HLCROPHYT	HLOROPHYT	TRYSOPHYT.	TAYSOPHY I	TANADONA	HRYSOPHYT	HRYSOPHYT	HAYSOPHY!	TANGUNAN	HRYSOPHYT	HRYSOPHYT	TAYSOPHYT	ARY SOPHY	**************************************	ANDORA	VANDPHY	YANDDMYT	CVANOPHYTA	YANDONA
TAXON	CT INA NAIST	TERIA	HLORELLA	HLDROCO	HODATELLA	LOSTERIO OELASTRU	RUCIGENIA	ACTYLOCO	LOEDACTINICA	OLENKINIA		24114411	COLASTRUM	RUTECOCC	TEROMON	7744 170V	CENEDESMU	CHRUEDER	ELEMASTRU	EIRAEURU	TARUDARIA	ROCHISCI	NID GRE	CHNANTER	MAKAC 207	ATOHA	RAGILA	ELOSIR	A V 2001 A	HIGGYTI	HOICOSPHENIA	TEPHANDO I SC	URIRELL	YNEUKA	200000	NACYSTI	PHANDTHEC	ACTYLOCO	LOEOTHECE	ER I SMOPE

DOT TASK S PHYTOPLANKTON LISTING

RIVER-INDIAN CREEK RIV_HILE=000,0 SAM_LGC=AJ DATE=79-09-24	GROUP	CYANDPHYTA	CYANDPHYTA 52938	CYANDPHYTA	EUGLENDPHYTA	EUGLENDPHYTA	EUGLENDPHYTA	TOTAL CASE AND A COLOR
CREEK RIV_MIL	7	LLATORIA	OSCILLATORIA (SPIRAL)	UL INA	TOCLENA	A73	N C	947676
NATURALINE TOTAL T	AAX D.N.	11250	11350	12 T 4 S			STATE	

				•																																								
DATE=79-09-25	7 2 2	541836	55100	255700		12456	10000	9229	7116	44764	061000	15570	21672	1001	4324	15256	74254	146351	72167	092082	****	6228	2260764	161920	292716	121446	78787	15570	45394	180954	15570	32862042	37368	3114	473328	233550	96534	984024	416164	8678511	71622	15570	8228	99765
004.0 SAM_LECTAL	900E9	CHLOROPHYTA	CHLOROPHYTA		4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	CHLORDPHYTA	CHLORDPHYTA	CHLOROPHYTA	CHLOROPHYTA	A CARACINAL CONTRACTOR		CALOROPAYA	CHLORDPHYTA	CHLORDPHYA	CALOROPA77A	CMLDROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHIDROPHYTA		TANADAD IN	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLOROPHYTA		CAL DROPHY A	CHLOROPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA			A HAROCANAL A HAROCANAL	CHRYSOPHYTA	CRYPTOPHYTA	CYANDPHYTA	CYANDPIYA SECTION SECTION SECT				CYANDPHYTA		EUGLENDPHYA
NIVER-INDIAN CREEK RIV.MILE BOOK.O	TAXON	ACTINASTRUE	ANKINIADOESEUS		CHICAGELA	CHLUADGONIUM	CHODATELLA	CLOSTERIOPSIS	CLOSTERIOR	COFLASTRUM		のものとしいが、これにものに	EUDURINA	GLOEOACTINIUM	601.67.12.14 X 201.22.60.16.14		000 75 7 85	PEDIASTRUM	PLANKIOSPHAERIA	マスローのこのでは、	SANCELEGAS	ROYA	SCENEDESMUS	SCHROEDERIA	SOLUZASIACE			TROCHISCIA	ACHNANTHES	CHARACTORSIS	DICHOTOMOCOCCUS	MELUSIAA	NAVICULA	STEPMANDISCUS	SYNEDRA	CRYPTOHONAS	ANABAENA	AZACTUS ()	LACTICATIONS ALL ANGRARA	MERISHOPEDIA	OSCILLATORIA	OSCILLATORIA (SPIRAL)	47 - C - C - C - C - C - C - C - C - C -	FUGLENA
NIVER																							,	•																				

BISS TUESDAY, FEBRUARY 26, 1980 13

9342 EUGLENDPHYTA PHACUS

GROUP

TAXON

DATE=79-09-25 ----------

X B A X

TAXON	GROUP	NLA
TINASTRU	HLOROPHYT	0828
KISTADDE	HOYOTH	276
RACTEACOCCU	HLORUPHYT	9342
HLAMYDOMON	HL DROPHY	16775
HLURELLA	HICROPHYT	3
HLORDCON	HLORUPHYT	1968
SDATELLA	HLOROPHY	684
LOSTER10	HLOROPHYT	934
RUCICENIA	H ORUPH	775
ACTYLOCOCC	HLORUPHYT	736
LOEDACTINIU	HLOROPHYT	3736
ナつ120	HLDRUPHYT	0276
Ĕ	HLORUPHYT	7
1CALT JAIU	HLCRUPHYT	6157
EDIASTR	HLOROPHYT	2450
ROTOCOCC	HLOROPHYT	7091
EROMO	HLDRUPHYT	802
YAMENON	HICROPH	736
DYA	ML OROPHYT	936
Ü,	HLORUPHYT	4
CHROEDERS	HLOROPHYT	4013
ELENASTRU	HLOROPHYT	0110
ETRAEORO	HLOROPH	5681
REUBAR	HLORUPHYT	934
RDCHISCI	HLOROPHYT	805
Ĭ	HRYSUPHYT	2
HARAC 10P	HRYSOPHYT	9618
1 A T DMA	HRYSUPHYT	934
EL 05 18	HRYSOPHYT	228
AVICUL	HRYSOPHY	5605
1725CHI	HRYSOPHY	934
PHIOCYTION	<b>HANDONAN</b>	36
TEPMANDOI	HRYSOPHYT	880
RIRELL	HRYSOPHYT	34
YNEDRA	HRYSUPH	78
RYP TOY	RYPTOPHYT	1749
NABAENA	YANDDHAY	9345
NACYSTIS	YANDDAAY	6222
PHANDTHECE	YANDPHYT	4947
ACTYL DC DCC	YANDDAY	9401
ERISHOPEDI	YANGDNAY	8
SCILLATORIA	YANGPAY	2144
3C15CA10X	YANDVAY	2
PIRCLINA	YANDPHYT	7
RYPTOCL	HADNUTOO	934
2000	TACK WINDS	8
nu	EUGLENDYHYTA	2566
		0

MEP_NUMBA 111111111111111111111111111111111111																																												
DATE=79-09-24	エンス	887490	84078	9342	457758	756762	46710	177498	140130	336312	74736	65394	2242CB	298944	364338	18684	1700244	166840	242892	74736	37368	2966	93420	8362	112104	112104	246	7170717		0//0617	84078	130788	990671	880585	632286	37308	27736398	93420	74736	28026	9342	261576	18684	2002
SAM_LOC=AJ	GROUP	CHLOROPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLORGPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLDROPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	ATVHUNYAHO STATEMENT A	4 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -			CRYPTOPHYTA	CYANDPHYTA	CYANDPHYTA	CYANDPHYTA	CYANDPHYTA	CYANGERIA	CYANDPHYTA	CYANDPHYTA	CYANDPHYTA	CYANDPHYTA	EUGLENOPHYTA	EUCLENDPHYTA	EUGLENDPHYTA	EUGLENUTHTIA
STITESTIFFICE TO STATE STATES AND STATES SIVEMILE SOOO, O	TAXON	MURT RAY LT DA	ANKISTRODESHUS	CARTERIA	CHLAMYDOMONAS	CHLORELLA	HO10000HO	CHODATELLA	COELASTRUM	ALMOID GRAIA	• DICTYOSPHAERIUM	COLENKINIA	#TIBE BENEFICIAL F	#DIVIFOR FOR FOR FOR FOR FOR FOR FOR FOR FOR	PASTSCECUS	PYRAMIMONAS	SCEVEDESMUS	SCIRDEDERIA	SELEVASTAUM .	TETALEORON	TETRASTRUM	1 A E C B A R & A	410011V0C1	RE ZUBECO IZO	ACTUANTIES	CHARAC 10PS 1S	<b>4</b> こことのできません。	4 = 1.00 (4 )	1777	ODDO TORALLANDO TORALL	SANGEDERYACI	ANABAENA	S 1 LSV J S T LS	APIACHOLACION .	DACTYLOCOCCOPS:S	פרסבתו אבכב	MERISADPEDIA		OSCILLATORIA (SPIRAL)	SPINDLINA	ANA 100LENA	EUGLENA	SOUTE	- ABCHE CHOND

ARPLNUS TETLESTEET TETELESTEET WEXNUS

DATE=79-09-24
SAM_LOC=AJ
RIV_HILE=000.0
RIVER-INDIAN CREEK

NOIN	CREEK	RIV_HILE=000.0	SAM_LOC-AJ	DATE=79-09-24
	TAXON		GROUP	NCW
	Ξ	A)	HLOROPHYT	4841
	2	-	HLOROPHYT	210
	٦,	MONAS	HLOROPHYT	6660
	CHLORELLA	4	DRUPH	653940
	ч.	K DUU	HLOROPHYT	6239
	3	, L A	HLOROPHYT	970
		15	HLOROPHYT	538
	ਖ		HLORUPHYT	157
	-	HAERIUM	HLOROPHYT	735
	۳,	4I A	HLORUPHYT	671
	ະ	IELLA	HLOROPHYT	0552
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	5	£5.2	HLOROPHYT	407
	~	NAS	HLORUPHYT	4671
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	=	10.2	HLOROPHYT	6815
	ᇳ	<b>4</b>	HLOROPHYT	934
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	÷	ĒS	HRYSOPHYT	539
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	¥	<b>41</b> 1	HRYSOPHYT	934
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	7	,	HRYSUPHYT	2
	*	NAS	RYPTOPHYT	5883
	¥	<b>S</b>	YANDDHYT	342
	5	:0cc0PS1S	YANDDHAT	26032
	$\overline{a}$	EDIA	VANDPHYT	387
	5	_	VANOPHYT	3078
	3	TORIA (SPIRAL)	YANDPHY	736
	=	ENA	UCLENDPHYT	934
	3		CCLEN	18684
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	DOT TASK & PHYT	PHYTOPLANKION LISTING	צט	13154 FRICAY, FEBRUARY
SECTION STATEMENT ALVERSINDIAN	CREEK RIV.HILE BOOK.O	SAM_LUC-AJ	DATE=79-09-25	PRP_NCHA!
	TAXON	GROUP	F 12	
	ACT I VASTRUE	CHLORUPHYTA	429732	
	ANK I STRODE SHUS	HLDRUPHYT	233550	
	BRACTEACOCCUS	CHLCRUPHYTA	112164	
		C T C C C C C C C C C C C C C C C C C C	050001	
		CHLOROPHYTA	28026	
	CHOOATELLA	CHLORUPHYTA	168156	
	CLOSTERIOPSIS	CHLCROPHYTA	9342	
	CRUCICENTA	CHLORUPHYTA	599966	
	DICTYOSPHAERIUM	CHLCRCPHYTA	37368	
	ELAKATOTHRIX	CHLOROPHYTA	01/95	
	EUDORINA PLORDANTINIO	CHLOROPHYTA ALYBOROPHYTA	74736	
	20 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	CHICKGPHYTA	186.8	
	KIRCHNERIELLA	CHLOROPHYTA	74736	
	MICRECTIVIUM	CHLORUPHYTA	102762	
	00075115	CHLOROPHYTA	18684	
	PEDIASTRUM	CHLORUPHYTA	373680	
			026468	
	7470707070	ATAMOROUS STORY	7346	
	ROYA	CHICAGORYTA	0 4 F 6	
	SCENEDESMUS	CHLORDPHYTA	2335500	
	SCHAGEDERIA	CHLOROPHYTA	140130	
	SELEMASTRUM	CHLORUPHYTA	383022	
	TETRAEDRON	CHLOROPHYTA	102762	
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		4 - > 10 C - > C -		
	NAVICULA	CHRYSUPHYTA	4689	
	NITZSCHIA	CHRYSOPHYTA	9342	
	STEPHANDRISCUS	CHRYSOPHYTA	1064988	
	SANEDRA Perendro	CHRYSOPHYTA	532494	
	ATABAEZA	CYANDPHYTA	140130	
	ANACYSTIS	CYANDPHYTA	401706	
	DACTYLOCOCCOPSIS	CYANUPHYTA	1027620	
	LYNG9YA	CYANDPHYTA	18684	
	MER I SMOPED IA	CYANDPHYTA	39740868	
		CYANDPHYTA	84078	
	OSCILLATORIA (SPIRAL)	ALYRODAY)	9342	
		FIGURE PART A	10004	
	EUGLENA	EUGLENOPHYTA		
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		TAXON		GADUP	NON.
		ACTINASTRUM	#0#	CHLORUPHYTA	691308
		ANK I STRODE SHUS	DESHUS	CHLORUPHYTA	298944
		BRACTEACOCCUS	OCCUS	CHLORUPHYTA	270918
		CHL AHYOGHONAS	HONAS	CHLOROPHYTA	929464
		CHLORELLA	⋖	CHLOROPHYTA	719334
		CHUDATELLA		CHLORDPHYTA	214866
		CLOS16410731	61645	CALCOROPHY A	2566
		COFLASTRUM	5 5	CHI DRUPHY A	7756
		CRUCIGENIA	<b>A</b>	CHLORUPHYTA	373660
		DICTYDSPHAERIUM	HAERIUM	CHLOROPHYTA	18684
		COLENKIN	<b>4</b>	CHLOROPHYTA	26052
		A 1 K C MARK 1 E L L A	1 1 1 1 A		97092
			E O	CALOXOFHY TA	596862
		PEDIASTRUM			7575
,		PLACKTOSPHAER IA	PHAERIA	CHLORUPHYTA	74736
		PROTOCOCCUS	cus	CHLORUPHYTA	411048
		PYRAM! 40NAS	NAS	CHLORUPHYTA	9342
		ROYA		CHLOROPHYTA	9342
		SCENEDESHUS	SOF	CHLOROPHYTA	2129976
		SCHAUCOEKIA	4 : X	CHLORUPHYTA	7/5671
		SELENASTRUM		CHLOROPHYTA	298944
		TETRAEDRUN	53	CHLOROPHYTA	140130
		4011041101 401104110	5.	CHLORUPHY 1A	216966
		T TATOUR T	<b>*</b> *		7366
		ACHNANTHES		CHRYSDPHYA	2756
		CHARACIO	9515	CHRYSUPHYTA	102762
		CYCLOTELLA		CHRYSOPHYTA	9342
		DICHOTOMOCOCCUS	200000	CHRYSUPHYTA	46710
		MELOSIRA		CHRYSOPHYTA	32790420
		NAVICULA	-	CHRYSOPHYTA	37368
		STEPHANDO I SCUS	o I Scus	CHRYSUPHYTA	908898
		SYNEDRA		CHRYSUPHYTA	569862
		CRYPTOYONAS	NAS	CRYPIOPHYIA	224208
		ANABAENA		CYANDPHYTA	149472
		ANACYSTIS	·	CYANDPHYTA	1457352
		DACTYLOCOCCOPSIS	215d0220	CYANDPHYTA	924858
		MERISHOP	EDIA	CYANDPHYTA	76865976
	•	DSCILLATORIA		CYANDPHYTA	74736
		DSCILLATORIA	DRIA (SPIRAL)	CYANDPHYTA	
		EUGLENA		EUGLENOPHIA	44600

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BISS TUESDAY, FEBRUARY 26, 1980	REBARREN FOR CREEK RIV.MILEBOOL.2 SAMLLOCBAJ DATER79-09-24
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TX	CHLORELLA	CHLOROPHYTA	289685	
Ĭ	HOUSE STORE OF THE	CHLORUPHYTA	6230	
	JOATELLA	CHLORUPHYTA	60404	
130	CLUSTERIUM	CHLOROPHYTA	3115	
	T ASTRUM	ATVERDANCE	01401	
	LO LOENTA	CHI DROPHYTA	96505	
	SKATOTHRIX	CHI DRUPHY 1A	6230	
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		CHURCHIA	00116	
9	GOLENAINIA	CHLUKUPHYTA	34265	
¥	RCHMERIELLA	CHLORUPHYTA	130830	
E	MICRACHINICA	CHLOROPHYTA	18650	
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	CONTROL A	CHLUKUPHYTA	21805	
	SCHNEDESACS	CHLORGPHYTA	956309	
ت ا	HRDEDERIA	CHLORUPHYTA	24920	
<u>ي</u>	<b>HOGHSAPS</b>	CHLORUPHYTA	224280	
36	TRAEDRON	CHLORUPHYTA	71645	
	TOAL STAIL	CHI DROPHYTA	62300	•
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		CHICKUPHYTA	006991	
Z -	ביי מארי או	CHUNDANAIA	9343	
٠	INANTHES	CIRYSOPIYTA	15575	
Ĭ	CHAETOCEROS	CHRYSOPHYTA	24920	
Ť	51.	CHRYSOPHYTA	105910	
Š		CHRYSOPHYTA	3115	
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	E PARADO LOS	CHRISONALA CHRISONALA	00016	
	SURIRELLA	O LY A CONTACT A	3112	
>S	SYMEDRA	CERTSCPITT	261660	
£0	CRYPTOMONAS	CRYPTOPHYTA	143250	
X	ANABARAA	CYANDPHYTA	6230	
Z	ANACYSTIS	CVANDPHYTA	1118285	
40	DACTYLOCOCCOPSIS	CYANDPHYTA	280350	
	MED TATORDAY	CVANCIDATA	**************************************	
		ATAMOUNTA	C 00 C C 4	
	71 - A TOD 1 A CO VOA	**************************************		
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	MANAGED CO.	4 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -	0529	
	YP TOCLENA	EUGLENOPHYTA	096.4	
<b></b>	EUGLENA	EUGLENDPHYTA	261660	
Ĭ.	HACUS	EUCLENDPHYTA	5116	
	ACHELOMONAS	EUGLENDPHYTA	37380	

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LAYOUMONAS LORELLA	LOROPHY COROPHY	722680 327075
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	RIVER.BARREN FORK CREEK		RIV_MILE FOOL 2	SAM_LOC.AJ	DATE=79-09-24
		TAXON		GROUP	¥ 72
		ACTINASTRUM		CHLOROPHY 14	239455
		ANKISTRODESMUS	405	CHLORUPHYTA	62300
		BRACTEACOCCUS	SO	CHLOROPHYTA	3115
		CHL AMYDOMONA	ΑS	CHLORUPHYTA	485940
		CHLORELLA		CHLORUPHYTA	158865
		CHLOROGONIUM	_	CHLOROPHYTA	15575
		CHODATELLA		CHLOROPHYTA	07652
		COELASTRUM		CHLORUPHYTA	149520
		CRUCICENIA FUDDO TEA			227395
		GI DEDACTINIUM	¥.	CHICKOPHIA	07647
		COLENAINIA		CHLOROPHYTA	15575
		KIRCHVERIELI	114	CHLOROPHYTA	109025
		00CYST1S		CHLORUPHYTA	3115
		PEULASTRUM		CHLOROPHYTA	46725
		PROTOCOCCUS		CHLORUPHYTA	161980
•		PTEROMONAS		CHLOROPHYTA	3115
•		PYRAMIMONAS		CHLORUPHYTA	9345
		QUADR SOLA		CHLOROPHYTA	12460
				ALVHUNDAU LAN	58059
		ALI FRANCISE			24007
		TETOARDEN			0 F F C C C C
		TETE ACTOR			02626
		TREUBARIA		CHLOROPHYTA	500
		TRUCHISCIA		CHLOROPHYTA	330190
			7.2	CHLOROPHYTA	3115
		ACHNANTHES		CHRYSOPHYTA	28035
		2	u	CHRYSOPHYTA	21805
		CYMBELLA		CHRYSOPHYTA	3118
		20.700.70		CHRYSOPHYIA	3115
		NAVICULA		ダート T A C C > 4 T > 1	1004400F
		OPHICCYT TUN		CHRYSUPHYTA	6230
•		STEPHANDDISCUS	So:	CHRYSOPHYTA	202475
		SURIRELLA		CHRYSUPHYTA	3115
		SYNEORA		CHRYSOPHYTA	186900
		ANACYSTIS		CYANUPHYTA	370685
		DACTYLOCOCCOPSI	21240	CYANDPHYTA	202479
		MEKINACPEDIA	<b>.</b>	CYANDPHYTA	0588619
		DSCILLATORIA		A LYHADAAYO	31150
		420 - 40 - 40 - 40 - 40 - 40 - 40 - 40 -	CANING!	C TANCETTA	5776
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		TRACHELDHONAS	7	FUGLENDPHY TA	04604

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ALTERNATION OF BRANCH RIVERSHUNTSVILLE SPRING BRANCH RI	NCXAT	まつみたの母アドレンダ	ANKISTRODESMUS	BOTRYDCOCCUS	BRACTEACOCOUS	CHERKACORONA	3.44.00.00 4.44.00.00 4.44.00.00 4.44.00.00 4.44.00 4.40.00 4.	を		KULUSTEN LOLD	DICTYDSPIAERIUM	COLENAINIA	¥つUZ03	X I NOTINE LINE	MOIN TORK OUT	FOITSTIE	SOUDOPORT		4.74	のこうならしているか	ま この トレル プロ・ロン		4…301130041	LE NUMBER OF THE PROPERTY OF T	ACHNANTES	CHARTOCEROS	_	4.53.00x.53	4	SUBSTANCE	SYVEDAA	SANDHOLDADADS	ANABAENA	AZACKSHI N	SUCCOCC	DACTYLOCOCOPSIS	LYNGBYA	MERISMOPEDIA	DSCILLATORIA	ADSCRIPTION OF THE PARTY OF THE	₹ Z M J J J J L L K J M J J J L L K J M J J L L K J M J L L L L L L L L L L L L L L L L L	: : : :

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4	NK I STRODE	3.	HLOROP	-	34
<b>6</b>	RACTEACOC	SOO	CHLOROPY	HYTA	3115
U	HLAMYDDMO	4	HLOROP	_	6821
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S	OLENKINI		HLOROP	_	57
¥	1 RCHNER 1E	717	HOROJH	-	934
nc	DYA		H_CORO_H	-	23
S	CENEDE SHU		HLOROP	-	22
S	CHROEDER I	<	HLOROPH	-	4
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⋖	CHNANTE		HRYSOP	-	=
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	ANK I STRODE SHUS	DESMUS	CHLOROPHYTA	15575
	CHLAMYDOMONAS	DMONAS	CHLOROPMYTA	146405
	COSMARIL	Ŧ	CHLORDPHYTA	3115
	CRUC 1 GEN 1 A	41.	CHLOROPHYTA	12460
	DICTYOSP	DICTYOSPHAERIUM	CHLOROPHYTA	12460
	EDI NOS		CHLOROPHYTA	12460
	KIRCHNER IELLA	\ IELLA	CHLOROPHYTA	12460
	SCENEDESHUS	SHUS	CHLOROPHYTA	68530
	ACHNANTHES	ĘS	CHRYSOPHYTA	6230
•	CHARACIOPSIS	212	CHRYSOPHYTA	6230
	CYMBELLA		CHRYSOPHYTA	3115
	MELOSIRA		CHRYSOPHYTA	12460
	NAVICULA		CHRYSOPHYTA	71645
	NITZSCHIA	¥.	CHRYSOPHYTA	21805
	SYNEDRA		CHRYSOPHYTA	12460
	ANACYSTIS	2	CYANDPHYTA	140175
	DACTYLOC	DACTYLOCOCCOPSIS	CYANDPHYTA	09869
	LYNGBYA		CYANDPHYTA	15575
	MERISMOPEDIA	EDIA	CYANDPHYTA	946960
	OSCILLATORIA	TOR 1A	CYANDPHYTA	183785
	EUGLENA		EUGLENDPHYTA	34265

DOT TASK S PHYTCPLANKTON LISTING

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മ	i i	4770		1972	. 0	• •	. ~		3	•	200	ıα	415	2595	1246	7166	345¢	1036	515	966	207	103	1879	1145	197	1038	2	Ö	5	20	363	416	7	103833	6230	207	61572	83		_	1349	202	20	1142
#289.7 SAM_LCC#AD	& n & n & e 9	AT VHOUSOUTH A	T A R G C R C		A I > I A CO A CO A CO	ATYHOLOGILA	A T > K Q C C C L L C		WE MIND THE	A LA LA COUNTRAL L		V → × ACCULAC	PHAC	CHLOROPHYTA	PHYT	CHLORUPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLCROPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLCRCPHYTA	CHLOROPHYTA	CHLOROPHYTA	CHLDRUPHYTA	CHLORUPHYTA	AT PROPERTY OF A STATE	A LANGUAGE	CHRYSOPHYTA	4 F > 2 a C b > 4 C C b > 4 C C b > 4 C C b > 4 C C b > 4 C C C b > 4 C C C b > 4 C C C b > 4 C C C b > 4 C C C b > 4 C C C b > 4 C C C C C C C C C C C C C C C C C C		( 4	CHRYSOPHYTA	CHRYSOPHYTA	CRYPTOPHYTA	CYANDDAYA	CYANDPHYTA	⋖		CYANDPHYTA	CANDYNATA	EUGLE NOPHYTA	EUGLENUPHYTA
AIVERSTRACTORS RIVER RIVER RIVERING SOUT	70×4 F		ANK 1STRODESMUS	BAACTEACOCOUS	SENDEDENE	A11285C145	まり1 次回りはかのしてい	A - AFACCA C		7 - 7 - 7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	MILL AND A CONTROL OF	X CONTROL OF THE	EOUT TE COLOR	COLECAINEA	I Y A COT ME CA	A 12C JVER IELLA	#OREST DAYORE	HICRASTERIAS	SILS	PROTOGOGOS	PTEADADADAS	PANDLILANA	SCEVEDESAUS	SCHADEOERIA	SELENASTRUM	TREUBARIA	A STANCE OF STAN	一番 というけい つってつ		AN TOTAL OF THE PARTY OF THE PA		4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	(二) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	STEPARADISCUS	SYNEDAA	CRYPIDHONAS	ANACYSTIS		DACTYLOCOCCOPSIS	MERISHOPEDIA		OSCILLATORIA (SPIRAL)	CRYPIOCENA	MUCCERA
											•																																	

DOT TASK S PHYTOPLANKTON LISTING

REPLNUMAL STATES

STATEMENT STATEM	RIVER OTENNESSEE	RIVER RIV_MILE#289.7	7 SAM_LOC=AD	DATE=79-09-2
		TAXON	GROUP	ĦON
		ACTINASTRUM	CHLOROPHYTA	133945
		ANKISTRODESMUS	CHLOROPHYTA	12460
		BRACTEACOCCUS	CHLUROPHYTA	6230
		CHLAHYDCHONAS	CHLOROPHYTA	06609
		CHLORELLA	CHLOROPHYTA	196245
4		CHLOROGONIUM	CHLOROPHYTA	6230
•		CLOSTERIOPSIS	CHLOROPHYTA	6230
		CAUCIGENIA	CHLOROPHYTA	37380
		DICTYDSPHAERIUM	CHLURDPHYTA	105910
		ELAKATOTHRIX	CHLOROPHYTA	6230
		GLOEDACTINIUM	CHLURDPHYTA	12460
		COLENKINIA	CHLOROPHYTA	15575
		HYALOTHECA	CHLOROPHYTA	37380
		KIRCHNERIELLA	CHLOROPHYTA	102795
		MICRACTINION	CHLOROPHYTA	6230
		00075115	CHLOROPHYTA	15575
		PROTOCOCCUS	CHLOROPHYTA	208705
		PYRAHIHONAS	CHLOROPHYTA	3115
		SCENEDESMUS	CHLOROPHYTA	171325
		SCHROEDERIA	CHLUROPHYTA	21805
		SELENASTRUM	CHLOROPHYTA	18690
		UNID CREEN #1	CHLOROPHYTA	3115
		ACHMANTHES	CHRYSOPHYTA	3115
		CHAETOCEROS	CHRYSOPHYTA	77875
		MELOSIRA	CHRYSOPHYTA	2520035
		STEPHANDOISCUS	CHRYSOPHYTA	130830
		SYNEDRA	CHRYSOPHYTA	34265
		CRYPTOMONAS	CRYPIOPHYTA	3115
		ANACYSTIS	CYANDPHYTA	713335
		DACTYLOCOCCOPSIS	CYANDPHYTA	06608
		MERISHOPEDIA	CYANDPHYTA	2906295
		OSCILLATORIA	CYANOPHYTA	18690
		EUGLENA	EUGLENDPHYTA	78690

## REPLYCHEN ATTENDED TO THE STATE OF THE STATE SECTION OF THE STATEMENT OF THE STATEMEN

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2	DATE=79-09-
	SAM_LOC MAD
001 - 01 - 01 - 01 - 01 - 01 - 01 - 01	RIV_MILE#289",7
	**************************************

AD DATE=79-09-28	I OZ	Š	=	115	3394	306365	311	=	246	787	9.7	672	38	656	7	541	2	=	\$	=	23	051	541	918	431	92	672	733	23	23
7 SAM_LOCA	GROUP	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	CHLOROPHYTA	HLOROPHYT.	HLOROPHYT	HLOROPHYT.	HLOROPHYT	HLUROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLUROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	YANDDHYT	VANOPHYT	YANDDHYT	YANDPHYT	YANDDHAT	nolend
B RIVER RIV_MILE@289	TAXON	CTINASTRU	NK I STRODE SM	RACTEACOC	HL AMYDOMONA		HODATELL	LOSTERI	RUCIGENIA	1CTYOSPHAE	LAKATOTHR	DLENKINI	IRCHNERIEL	I CRACT INI	<b>ICRASTERIA</b>	ROTOCOCC	CENEDESMU	CHROCOERI	ELENASTRU	REUBARI	CHNANTH	ELOS 1R	TEPHAN	YNEDRA	NACYSTI	HROUCOCCU	ACTYLOCOCC	ERISMOPED	SCILLATORI	RYPTOGLEN

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	CHICACENTA CHROPOPYTA	9 345 2070	
BAACTEACOCCUS	CHLUROPHYTA	15575	
CALAMADOMONAS	CHLORCPHYTA	20766	
CHL38ELLA	CHLUROPHYTA	36070	
CHOOMTELLA	CHLORCPHYTA	3115	
CLOSTERIO2515	CHLOROPHYTA	1038	
CRUCIGENIA	CHLOROPHYTA	4153	
DACTYLECECCOS	CHLUROPHYTA	3115	
ELAKATOTEKIX	CHLCACPHYTA	4153	
60LE5K151A	CHLCACPHYTA	6230	
KINCHNEN IELLA	CHLUROPHYTA	12460	
#ICAACTIVICA	CHLOROPHYTA	13498	
PEDIASTRUM	CHLURCPHYTA	4153	
SORVEDESHUS	CHLOROPHYTA	67491	
SELENASTRUM	CHLOROPHYTA	3115	
TETRAEORON	CHLCROPHYTA	2076	
TRUCHISCIA	CILOROPIYIA	1038	
ACLUANTIES	CHRYSOPHYTA	1038	
COCCOMEIS	CHRYSOPHYTA	1038	
DINDBRADN	CHAYSOPHYTA	10383	
MELOSIRA	CHRYSOPHYTA	707105	
NAVICULA	CHAYSOPHYTA	329151	
RHIZOSOLENIA	CHRYSUPHYTA	2076	•
STEPHANDOISCUS	CHAYSOPHYTA	18690	
SYVEDRA	CHRYSOPHYTA	16613	
CRYPIOMONAS	CRYPTOPHYTA	4153	
ANDBAENA	CYANDPHYTA	17651	
ANACYSTIS	CYANDPHYTA	69568	
DACTYLECOCCOPSIS	CYANDPHYTA	14536	
MERISMOPEDIA	CYANDPHYTA	225318	
OSCILLATORIA	CYANDPHYTA	3115	
CRYPIOGLENA	EUGLENDPHYTA	1038	

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STATEMENT STATEM	RIVER	RIV_HILE#289.9	9 SAM_LOC=AJ	DATE479-09-28
	TAX	TAXON	GROUP	NUM
	ACT	CTINASTRUM	CHLOROPHYTA	15975
	AZK	ANK I STRODE SMUS	CHLOROPHYTA	3115
	BRA	RACTEACOCCUS	CHLOROPHYTA	21805
	Ŧ	HLAMYDOMONAS	CHLOROPHYTA	28035
	Ī	HORELLA	CHLOROPHYTA	62300
	3	HUDDATELLA	CHLUROPHYTA	3119
	OVO	ACTYLOCOCCUS	CHLOROPHYTA	9345
	ชื่อ	GOLENKINIA	CHLOROPHYTA	6230
	X X	KIRCHVERIELLA	CHLOROPHYTA	31150
•	¥	HICRACTIVICA	CHLOROPHYTA	28035
	SCE	SCENEDESMUS	CHLUROPHYTA	43610
	SEL	SELENASTRUM	CHLOROPHYTA	6230
	> V	NAVICULA	CHRYSOPHYTA	987455
	STE	TEPHANDDISCUS	CHRYSOPHYTA	21805
	Z X	SYNEORA	CHRYSOPHYTA	9345
	HER	HERISHOPEDIA	CYANDPHYTA	277235
	OSC	3SC ILLATOR IA	CYANDPHYTA	3115
	<b>C</b> 83	RYPTOCLENA	EUGLENDPHYTA	3115

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13154 FRIDAY, FEBRUARY ZZ, 146 REP_NUMBZ TITTOTT	
11NG DATE#79-69-28	
CPLANKIUM LIST SAM_LUC=AJ	
RIV_HILE4289,9 SATUCTA LISTING	
UCT TASK 2 PHYTOPLANKION LISTING 13154 FRIDAY, PEBRUARY 22, 1346 13154 FRIDAY, PEBRUARY 22, 1346 1346 FRIDAY, PEBRUARY 22, 1346 1346 1346 1346 1346 1346 1346 1346	

EON.	311	200	317	649	621:	311	218095 18690 241660 2115
9 10 10 10 10 10 10 10 10 10 10 10 10 10	DPHY	HICROPHYT	H CAROLAN			HAYSOPHYT HAYSOPHYT HAYSOPHYT	**************************************
TAXON	NK ISTRODESMI	HLAMYDOMU H. DRF1 - A	LOSTER RUCICE	CRACTIN FOLANTRU	CENEDE SHE	DCCONE 1S ELOS 1RA	7 <b>4</b> 0 0 <b>4</b>

REP\_NUMBS STATESTEET

32.	DATE # 79-09-28
DELANKION LISTING	SAM_LOC-4J
DOI TASK S PHYTOPLANKIUS	RIV_HILE#28929
	RIVER TENNESSEE RIVER
	PROFESSOR SAN_LOCATION NOT BUTENNESSEE RIVER RIV.MILERZ8929 SAN_LOCAJ DATER79409-28

¥ O Z	•	9	6	5	23	\$	23	23	0	=	=	Ξ	115	2	6230	246	246	246	295	2	492	8	=	
GROUP	HLOROPHYT	HLUROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	CHRYSOPHYTA	HRYSOPHYT	HRYSOPHYT	RYPTOPHYT	YANDDAYT	YANDDHYT	YANDDHYT	YANDDHYT	VANDDHYT	
TAXON	CTINASTR	RACTEACOCCU	HLAMYDOM	HORELL	HODATELL	LAKATOTH	18CHNER 1E	ICRACTINIU	CENEDESAU	ETRAEDR	ROCHISC 1	CHVANTHE	INDBRYO	w	12050LEN	TEPHANDD 1 S	_	•	ABAENA	ACYSTIS	ころのつのしんしつ	MERISHOPEDIA	CILLATORI	

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DATE # 79-69-28	X D Z	3115	12460	6230	3115	31150	18690	12460	6230	9345	12450	12460	6230	43510	3115	18690	6230	3115	1018605	3115	21805	34265	203590	3115	07867	3115	3115
SAMLLOCHAP	<b>Q</b> DCQ <b>Q</b>	CHLCROPHYTA	CHLUROPHYTA	CHLURSPHYTA	CHLCROPHYTA	CHLOROPHYTA	CHLCROPHYTA	CHLORCPHYTA	CHLCROPMYTA	CHLCROPHYTA	CHLOPOPHYTA	CHLORDPHYTA	CHLCROPHYTA	CHLUROPHYTA	CHLCACPHYTA	CHLOROPHYTA	CHLCROPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CYANCPHYTA	CYANDPHYTA	CYANDPHYTA	CYANDPHYTA	PYRROPHYTA
**************************************	TAXON	ACANTIOSPHAERA	ACT 120AT TO A T	ANKISTADDESHOS	BRACTEACOCCUS	CHLAMYDOHONAS	CHLORELLA	CRUCERIA	ELAKATOTHRIX	GOLENKINIA	KIACHTERIELLA	SILSACOO	PEDIASTRUM	SORS DE SORS D	SCHROEDERIA	SELENASTRUM	TADCHISCIA	ACIZASTIES	A KI SO Jaw	NAVICULA	STEPHANDD1SCUS	SYVEORA	ANACYSTIS	DACTYLOCOCCOPSIS	AIGHISHOFEDIA	OSCILLATORIA	XOLVI GOVERNO

			DOT TASK 5 PHYTOPLANKTON LISTING	TOPLANKTON LIST	TING
PIETETTITETTETTETTETTETTETTETTETTETTETTET	RIVER # TENNESSEE	RIVER	RIV_MILEAZB9"9	SAH_LOC+AJ	DATE 479-09-28
		TAXON	N.	GROUP	X O X
		ACT	ACT I NASTRUX	CHLOROPHYTA	12460
		BRA BRA	BRACTEACOCCUS	CHLUROPHYTA	12460
		Ĭ	CHLAMYDOMONAS	CHLOROPHYTA	18690
		3	CHLORELLA	CHLOROPHYTA	52955
		C F G	CHODATELLA	CHLOROPHYA	6230
		EL &	ELAKATOTHRIX	CHLUROPHYTA	12460
		X	KIRCHNERIELLA	CHLOROPHYTA	6230
		] H	MICRACHINICA	CHLOROPHYTA	6230
		SCE	JEDE SAUS	CHLOROPHYTA	56070
•		167	TETRAEDRON	CHLOROPHYTA	3115
		780	TROCHISCIA	CHLOROPHYTA	3115
		ACE	ACHNANTHES	CHRYSOPHYTA	3115
		Ž	NOPREDI	CHRYSOPHYTA	31150
		MET.	MELOSIRA	CHRYSOPHYTA	968765
		E E	RHIZOSOLENIA	CHRYSOPHYTA	6230
		STE	STEPHANDDISCUS	CHRYSOPHYTA	12460
		オトの	SANEORA	CHRYSOPHYTA	12460
		S Z Z	CRYPTOMONAS	CRYPTOPHYTA	12460
		ANA	NABAENA	CYANDPHYTA	52955
		ANA	INACYSTIS	CYANDPHYTA	208705
		040	DACTYLOCOCCOPSIS	CYANDPHYTA	24920
		MER	MERISMOPEDIA	CYANDPHYTA	137060
		080	OSCILLATORIA	CVANDPHYTA	3115

13154 FRIDAY, PEBRUARY 22, 1980 30 REP\_NUNAS seleterenterenter

## DOT TASK 5 PHYTOPLANKTON LISTING

VEROTENNESSEE	RIVER	RIV_MILE=289'9	SAM_LOC.AP	DATE = 79-09-28	REP_NUM=2
	TAXON	Z.O	GROUP	NOM	
	ACA	CANTHUSPHAERA	CHLOROPHYTA	3115	
	ANA	ANK I STRODE SHUS	CHLOROPHYTA	6230	
	8 A A	RACTEACOCCUS	CHLUROPHYTA	3115	
	Į	CHLAMYDOMONAS	CHLOROPHYTA	43610	
	T T	CHLORELLA	CHLOROPHYTA	31150	
	j	KOLNOODKO	CHLOROPHYTA	12460	
	ธี	GOLENKINIA	CHLOROPHYTA	6230	
	7.40	PAYCORINA	CHLOROPMYTA	07867	
	CBd	1 ASHRUT	CHLUROPHYTA	24920	
	4 7	SAZOTIERKA	CHLOROPHYTA	3115	
	SCE	SCENEDESMUS	CHLCROPHYIA	71645	
	SEL	SELEYASTRUM	CHLOROPHYTA	3115	
	<b>₽</b>	TETRAEDRON	CHLGRUPHYTA	3115	
	<b>₹</b>	CHISCIA	CHLCROPHYTA	6230	
	CO CO	COVE 1 S	CHRYSOPHYTA	6230	
	210	CBRYON	CHRYSOPHYTA	9345	•
	E E	HELUSIRA	CHRYSOPHYTA	794325	
	> 4 P.	NAVICULA	CHRYSOPHYTA	6230	
	STE	STEPHANDDISCUS	CHRYSOPHYTA	34265	
	S	SYMEDRA	CHRYSOPHYTA	40495	
	CRY	CRYPTOMONAS	CRYPIOPHYTA	12460	
	ZZ	ANACYSTIS	CYANDPHYTA	77875	
	ă I	200000	CYANDPHYTA	37390	
	DAC	DACTYLOCOCCOPSIS	CYANDPHYTA	3115	
	#ER	ISHOPEDIA	CYANDPHYTA	199360	
	080	DSCILLATORIA	CYANDPHYTA	9345	
	EUG	EUGLENA	EUGLENDPHYTA	3115	
	313	SLENDOINION	PYRROPHYTA	3115	

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SAMILOCAAP	GROUP	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLGROPHYT	HL DROPHYT	HLOROPHYT	CHLOROPHYTA	HLOROPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	RYPTOPHYT	YANDPHYT	YANDPHYT	YANDPHYT	YANDDHY	YANDPHYT	EUGLENOPHYTA	UCLENDPHYT	
E RIVER RIV_MILE#289,9	TAXON	ACTINASTRUM	RACTEACOCC	HLAMYDOMUNA	글	를	음	20	<b>A</b> 50	E01	PTEROMONAS	ER	HAETOCERO	HARAC IUPS	2	STEPHANDDISCUS	SYMEDRA	CRYPIOMONAS	NABAENA	NACYSTIS	ACTYLOCOCC	ER I SHOPED	SCILLATORI	Ž	EUGLENA	

DATE=79+09-25 ---------

STATEMENT OF THE STATEMENT		RIV.HILEMBIS.O SAMELOCEAC	CEAC DATE:79-
	TAXON	GROUP	X E A Z
	ACTIVASTRUM	CHLOROPHYTA	4153
	ANKISTRODESMUS	CHLOROPHYTA	6230
	CHLAMYDOMONAS	CHLOROPHYTA	26996
	CHLCRELLA	CHLOROPHYTA	14536
	CHROATELLA	CHLDADPHYTA	1616
	CLOSTERIOPSIS	CHLCROPHYTA	2076
	DICTYDSPHAERICM	CHLOROPHYTA	4153
	GOLENK IP. IA	CHLOROPHYTA	7268
	HYALDTHECA	CHLOROPHYTA	4153
•	KIRCHNERIELLA	CHLOROPHYTA	8306
	MICAACTINIUM	CHLGROPHYTA	2076
	PEDIASTRUM	CHLOROPHYTA	31150
	POLYEORIOPSIS	CHLCROPHYTA	1038
	PADTOCOCCUS	CHLDROPHYTA	26035
	PTERDMONAS	CHLUROPHYTA	1038
	SCENEDESMOS	CHLGROPHYTA	41533
	SCHROEDERIA	CHLOROPHYTA	1038
	SELENASTRUM	CHLOROPHYTA	4153
	TETALEDRON	CHLOROPHYTA	3115
	TETRASTRUM	CHLOROPHYTA	4153
	ACHTANTHES	ATTI GOSTAIO	3115
	MELOSIRA	CHRYSOPHYTA	427793
	NITZSCHIA	CHRYSOPHYTA	1038
	DPAIDCYTIUM	CHRYSOPHYTA	6230
	STEPHANDD I SCUS	CHRYSOPHYTA	24920
	SYNEORA	CHRYSOPHYTA	21805
	CRYPIONONAS	CRYPTOPHYTA	2076
	AZABAEZA	CYANDPHYTA	41533
	AZABAENOPSIS	CYANCPHYTA	141213
	ANACYSTIS	CYANDPHYTA	242970
	DACTYLDCOCCOPSIS	CYANDPHYTA	10383
	MERISHOPEDIA	CYANDPIYTA	74760
	DSCILLATORIA	CYANDPHYTA	3115
		ECCLENDENT'S	1038
	M C C L M C C C L M C C C L M C C C C C	FUGLENOFATIA	5C76

DOT TASK S PHYTOPLANKTON LISTING

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28035	3 6	23	ž	=	=	2	Ξ	=	626	803	869	853	738	9	952	23	Š
<u>۔</u>	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLORUPHYT	HLORDPHYT	HLOROPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	YANDPHYT	YANDPHYT	YANDPHYT	VANDDHYT	YANDDHY	UCL ENDP
HLAMYDO.	LENKINI	IRCHNER	EDIASTRU	OLYEOR 10	TEROMONA	CENEDESA	ELENASTRU	CHNANA	ELOS 1R	TEPHA	YNEDR	NABAER	NACYSTE	ACTYLOCOC	ER I SMOPEDI	SCILLATORI	ฐ

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TAXON	CTINAST NKISTRO HLAMYDO	HLORELLA HODATELL LOSTERIO ICTYOSPH OLEMKINI	YALOTH TRCHWE CEREDE CHROEO	izo j⇔ 4 nuk

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T OX	0 -	~ ~ ~	M () M	311	-010	1869	24744 24744 24740 2114 2042
GROUP	HLOROPHYT HLOROPHYT	H OROPHYT	CHLOROPHYTA CHLOROPHYTA CHLOROPHYTA	HLOROPHYT HLOROPHYT	HLOROPHYT HRYSOPHYT	AYSOPHYT ANDPHYTA ANDPHYTA	VANOPH VANOPH UGLEND
TAXON	HLAMYDOM HLORELLA	LOSTE OF ENK	ROTOCOCO ROTOCOCO CENEDES	ELENAST ETRAEDR	ETRASTA ELOSIRA TERMANO	MEDRA ABAENA	DACTYLOCOCOPSIS MERISHOPEOIA CRYPTOCLENA EUGLENA

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TAXON	GROUP	HEAN
ANKISTRODESMUS	CHLOROPHYTA	4153
CALACYDOCOCAS	CHLDRUPHYTA	22843
CHLORELLA	CHLORUPAYTA	22843
CHODATELLA	CHLORUPHYTA	4159
CRUCISENIA	CHLORUPHYTA	24920
DICTIOSPHAERIUM	CHLCRUPHYTA	2000
COLENAINIA	CHLORUPHYTA	4.153
HYALDTHECA	CHLOROPHYTA	9343
MICRACTINICA	CHLOPUPHYTA	8306
PEDIASTRUM	CHLORUPHYTA	23881
PTERUICINAS	CHLORUPHYTA	
SCEVEDESHUS	CHLORUPHYTA	64376
TETRAEDROW	CHLCRUPHYTA	eco!
C # 73385 01/0	CHLORUPHYTA	62300
SUILZazior	CHRYSOPHYTA	3119
CYMBELLA	CHRYSOPHYTA	1036
MELOSIRA	CHRYSOPHYTA	372761
AITZSZTIA	CHRYSOPHYTA	1038
STEPIANDDISCUS	CHRYSUPHYTA	13498
SYNEDRA	CHRYSOPHYTA	22843
AZBAEZA	CYANDPHYTA	10383
ANACKSTIS	CYANGPHYTA	186900
DACTYLOCOCCOPSIS	CYANDPHYTA	6230
L ~ NGB * A	CYANDPHYTA	1038
MERISHOPEDIA	CYANDPHYTA	304231
DSCILLATORIA	CYANDPHYTA	4153
DSCILLATORIA (SPIRAL)	CYANDPHYTA	1038
RYPTOCLENA	EUGLENDPHYTA	3115
F. F. A.	ELC: FROBENTA	

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GROUP

TAXON

DATE=79-09-25
SAM_LOCAAJ
RIV_HILE#315:0
RIVER-TENNESSEE RIVER

246	115	8	311	246	3	3115	42	311	3	180	6	311	=
HLOROPHYT	HLOKOPHYT	HLOROPHYT.	HLOROPHYT	HLOROPHYT	HLOROPHYT.	CHRYSOPHYTA	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT.	HRYSOPHYT.	VANDDHYTA	YANDDHÝT	UGL ENDPH
NK ISTROD	HLAMYDOMON	HLORELLA	HODATEL	RUC I GENI	CENEDESM	ACHNANTHES	<b>ELUSIRA</b>	ITZSCHI	TEPHA	YNEDRA	NACYSTI	1113	RYPTOCLEN

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	TAXON		GROUP	NUK	
	CHLAMYDOMONAS	OMONAS	CHLDRUPHYTA	24920	
	CHLORELLA	L A	CHLUROPHYTA	24920	
	CHOOATELLA	1 T	CHLOROPHYTA	6230	
	CRUCICENIA	AIN	CHLORUPHYTA	62300	
	DICTYDS	DICTYDSPHAERIUM	CHLOROPHYTA	9345	
	GOLENA INIA	AIA	CHLORUPHYTA	6230	
	HYALOTHECA	ECA	CHLOROPHYTA	12460	
•	HICAACT	E0121	CHLUROPHYTA	24920	
	PTERDICIAS	NAS	CHLORUPHYTA	3115	
	SCENEDESMUS	SHOS	CHLORUPHYTA	40495	
	UNID GREEN	€E∿ # 2	CHLOROPHYTA	186900	
	ACT/ACTER S		CHRYSOPHYTA	3115	
	MELOS IRA	4	CHRYSOPHYTA	457905	
	STEPHAN	STEPHANDOISCUS	CHRYSOPHYTA	28033	
	SYVEDRA		CHRYSUPHYTA	24920	
	DACTYLO	DACTYLOCOCCOPSIS	CYANDPHYTA	9343	
	MERISHOPEDIA	PEDIA	CYANDPHYTA	675955	
	OSCILLATORIA	TORIA	CYANDPHYTA	3115	
	<b>DSCILLATORIA</b>	TORIA (SPIRAL)	CYANDPHYTA	3115	
	EUCLENA		EUGLENOPHYTA		

	DOT TASK 5 PHYTOPLANKTON LISTING	PLANKTON LIST	ONIL	13:54 FRI
RIVERSTENNESSEE RIVER RIV_HILESBIS.O SAH_LOCAAL DATE:19-09-25 REP_NUMS	RIV_MILE#315.0	SAM, LOC. AJ	DATE=79-09-25	REP_NUM.3

NON	12460 2115 21165 2230 6230 6230 6230 97164 97164 97165 97166 97166 9766 9766 9766 9766 9766 97	20
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315.0 SAM_LGCBAR	GROUP	CHLOROPHYTA	CHLORUPHYTA	CHLURUPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLCROPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLCRUPHYTA	CHLORUPHYTA	CHLORUPHYTA	CHLGRUPHYTA	CHLORUPHYTA	CHLOROPHYTA	CHLORDPHYTA	CHLORUPHYTA	CHLDRUPHYTA	CHLORUPHYTA	CHLCROPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSOPHYTA	CHRYSUPHYTA	CHRYSOPHYTA	CHRYSUPHYTA	CYANDPHYTA	CYANDPHYTA	CYALIDPHYTA	CYANDPHYTA	CYANOPHYTA	CYANDOMYTA	CYANDPHYTA	EUGLENDPHYTA	4-1000000000000000000000000000000000000
BISTOR SIVER RIVERS RIVER RIVERS RIVER RIV	70×4 F	ACTINASTRUM	SUMSDOUMESING	CHLAYOOHDNAS	CALORFILA	CHODATELLA	<b>∀</b> 10E210F3	DICTYDSPHAERIUM	QULENKINIA GOLEVKINIA	X I P.C. I J. E.L. A	S11<	PEDIASTRUM	SORSEGERA	SCIROECERIA	SELEVASTRUM	TETAAEDRON	TEARASTRUM	ተጽድ ( ይይል 🕻 ል	•		TE NEED CATO	SUT FEAT TO STATE OF THE STATE	NDA WEOLIG	MELUSIRA	NAVICULA	RHIZOSOLENIA	STEPHANDDISCUS	SYTEORY	ANABAENA	Avac-st18	SUSCECTUS	DACTYLOCOCCOPSIS			OSCILLATORIA (SPIRAL)		

13:54 FRIDAY, FEBRUARY 22, 1980	FENNESSEE RIVER RIV_HILE#315.0 SAM_LOC#AR DATE#79.09-25 REP_NUM#1 ************************************
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		TAXON		GROUP	х 2	
		ANK I STRODE SHUS	ESMUS	CHLOROPHYTA	3115	
		CHLAMYDOMDNAS	ONAS	CHLORGPHYTA	12460	
		CHLORELLA		CHLORUPHYTA	34265	
		CRUCIGENIA	4	CHLORUPHYTA	24864 24864	
		GOLENA INTA	4	CHLOROPHYTA	3115	
		KIRCHYERIELLA	ELLA	CHLOROPHYTA	24920	
		00CYS*1S		CHLOROPHYTA	6230	
		SCENEDESMUS	SO	CHLORUPHYTA	59195	
		SCHADEDER 14	4.	CHLORUPHYTA	3115	
•		SELENASTAUM	E)	CHLOROPHYTA	9345	
		TREUBLAIA		CHLOROPHYTA	3115	
		TACCAISCIA	4	CHLORUPHYTA	3115	
		MELOS IRA		CHRYSUPHYTA	345016	
		STEPHANDOISCUS	Iscus	CHRYSOPHYTA	21805	
		SYNEDRA		CHRYSUPHYTA	24920	
		ANACYSTIS		CYANDPHYTA	65415	
		DACTYLOCOCCOPSIS	CCOPSIS	CYANDPHYTA	3115	
		<b>OSCILLATORIA</b>	RIA .	CYANDPHYTA	31150	
		OSC ILLATO	SCILLATORIA (SPIRAL)	CYANDPHYTA	3115	
		EUGLENA		EUGLENDPHYTA	6230	
		TRACHELON	DNAS	EUGLENOPHYTA	3118	

13754 FRIDAY, FEBRUARY 22, 1980

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GIND ICENDAY, PERKUARY 207	**** RIVERSTENNESSEE RIVER RIV.MILE8345.2 SAM_LCC8AD DATER79*C9427 ************************************
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**************************************	RIVER TENNESSEE	RIVER	RIV.HILE#34512	SAM_LUC-AD	DATE=79-09-27	
		TAXON	z	GROUP	NUM	
		ANA	ANKISTRODESMUS	CHLOROPHYTA	3115	
		CHLA	CHLAMYDOMONAS	CHLOROPHYTA	43610	
		CHIC	CHLCRELLA	CHLURGPHYTA	12460	
		CHOD	CHODATELLA	CHLURDPHYTA	12460	
		CAUC	CRUC I GENIA	CHLOROPHYTA	12460	
		0101	DICTYOSPHAERIUM	CHLOROPHYTA	74760	
		COLE	GOLENKINIA	CHLOROPHYTA	18690	
		KIRC	KIRCHNERIELLA	CHLOROPHYTA	21805	
		A 1 CA	#1CAACTINICE	CHLOROPHYTA	6230	
		PEDI	PEDIASTRUM	CHLOROPHYTA	24920	
		PROT	PROTOCOCOS	CHLUROPHYTA	317730	
		SCEZ	SCENEDESHUS	CHLOROPHYTA	71645	
		SELE	SELENASTRUM	CHLUROPHYTA	18690	
		TETR	TETRAEDRON	CHLOROPHYTA	3115	
		TREU	TREUBARIA	CHLOROPHYTA	6230	
		ACHE	ACHIANTHES	CHRYSOPHYTA	12460	
		ASTE	ASTERIOLELLA	CHRYSOPHYTA	3115	
		HELO	MELOSIRA	CHRYSOPHYTA	432985	
		1140	DPHICCYTICA	CHRYSOPHYTA	9345	
		STEP	TEPHANDOISCUS	CHRYSOPHYTA	21805	
		SYNEDRA	DRA	CHRYSOPHYTA	18690	
		ANAB	INABAENA	CYANDPHYTA	351995	
		ANA	ANACYSTIS	CYANDPHYTA	962535	
		DACT	SACTYLOCOCCOPS IS	CYANDPHYTA	12460	
		MERI	MER I SHOPED ! A	CYANDPHYTA	389375	
		1050	DSCILLATORIA	CYANDPHYTA	21805	
		TRAC	TRACHELOMONAS	EUGLENDPHYTA	3115	

## DOT TASK S PHYTOPLANKTON LISTING

STATEMENT STATEM	RIVER RIV.MILE.345.2	SAM_LOC#AD	DATE=79-09=27	REP_NUMB2
	TAXON	GNOUP	N ON	
	ACTINASTRUM	CHLORCPHYTA	24920	
	ANK I STRODE SHUS	CHLOROPHYTA	3115	
	CHLAHYDOMONAS	CHLOROPHYTA	311.0	•
	CHLORELLA	CHLGROPHYTA	12460	
	CHODATELLA	CHLUROPHYTA	6230	
	GOLENKINIA	CHLOROPHYTA	18690	
	KIRCHNERIELLA	CHLOROPHYTA	6230	
	MICRACTINION	CHLORDPHYTA	15575	
	PROTOCOCCUS	CHLUROPHYTA	90335	
	SCENEDESMUS	CHLURGPH. TA	67220	
	SCHROEDERIA	CHLCROPHYTA	3115	
	ACHNANTHES	CHRYSOPHYTA	12460	
	ASTERIONELLA	CHRYSOPHYTA	9345	
	CHAETUCEROS	CHRYSOPHYTA	18690	
	MELOSIRA	CHRYSOPHYTA	1389290	
	NITZSCHIA	CHRYSOPHYTA	3115	
	STEPHANDDISCUS	CHRYSOPHYTA	40495	
	SYVEDRA	CHRYSOPHYTA	40495	
	ANDCYSTIS	CYANDPHYTA	432985	
	DACTYLCCOCCOPSIS	CYANDPHYTA	6230	
	LYNGBYA	CYANDPHYTA	3115	
	MER I SHOPED I A	CYANDPHYA	585620	
	OSCILLATORIA	CYANDPHYTA	6230	

13:54 FRIDAY, FEBRUARY 22, 1980 45	SSEE RIVER RIV_HILE#345.2 SAH_LOC#AD DATE#79m09-27 REP_NUM#3 #
ON LISTING	00=40 DATE=79-09-27
DOT TASK S PHYTOPLANKTON LISTING	RIV_HILEP345.2 SAH_L
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DDT TASK S PHYTOPLANKTON LISTING

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		COSMARIUM	CHLORDPHYTA	3115
		CRUCIGENIA	CHLOROPHYTA	12460
		COLENKINIA	CHLOROPHYTA	15575
		HYALDTHECA	CHLURDPHYTA	12450
		MICRACTINIUM	CHLORDPHYTA	9345
•		PEDIASTRUM	CHLORUPHYTA	149520
		PRUTOCOCCUS	CHLOROPHYTA	12460
		SCENEDESHUS	CHLORDPHYTA	74760
		SELENASTRUM	CHLURGPHYTA	3115
		TREUBARIA	CHLOROPHYTA	3115
		TRUCHISCIA	CHLURDPHYTA	3115
		ACHVANTHES	CHRYSOPHYTA	15575
		CHAETUCERUS	CHRYSOPHYTA	9345
		MELUSIRA	CHRYSOPHYTA	931385
		MAVICULA	CHRYSOPHYTA	6230
		RH120SOLEN1A	CHRYSOPHYTA	3115
		STEPHANDD I SCUS	CHRYSDPHYTA	40495
		SYNEDRA	CHRYSOPHYTA	112140
		ANABAENA	CYANDPHYTA	28035
		ANACYSTIS	CYANDPHYTA	703990
•		CHROOCOCOS	_	6230
		DACTYLOCOCCOPSIS	•	28035
		MERISHOPEDIA	CYANDPHYTA	40495
		OSCILLATORIA	CYANDPHYTA	21805
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BISS TURSDAY, FEBRUARY 2	RIVERBTEUNESSEE RIVER RIV_MILER345.2 SAH_LOCBAR DATEB79-09-27
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		TAXON	z	GROUP	HON
		ACTI	ACTINASTRUM	CHLOROPHYTA	24920
		CHLA	CHLAMYDENDNAS	CHLOROPHYTA	9345
		0 H3	HORELLA	CHLOROPHYTA	15575
		DICT	ICTYOSPHAER TUM	CHLOROPHYTA	137060
		100	COLENKINIA	CHLORDPHYTA	3115
		POLY	OL YEDR 10PS 15	CHLOROPHYTA	3115
		PROT	Ratacaccus	CHLOROPHYTA	84105
		PTER	TEROMONAS	CHLOROPHYTA	3115
		SCEN	SCENEDESMUS	CHLOROPHYTA	15575
•		ZESK	ACHNANTES	CHRYSOPHYTA	6230
•		MELO	MELOSIRA	CHRYSUPHYTA	183785
. •		STEP	HANDO I SCUS	CHRYSOPHYTA	24920
		SYNEDRA	DRA	CHRYSOPHYTA	24920
		ANAC	NACYSTIS	CYANDPHYTA	193130
		DACT	ACTYLOCOCCOPS IS	CYANDPHYTA	3115
		MERI	TER I SHOPED IA	CYANDPHYTA	74760
		1080	SCILLATORIA	CYANDPHYTA	3115

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	7 H D	CHLAMYDOMONAS	CHLOROPHYTA	24920		
	13	CHLORELLA	CHLOROPHYTA	6230		
	SONO	RUCIGENIA	CHLOROPHYTA	12460		
	1010	DICTYDSPHAERIUM	CHLOROPHYTA	49840		
	FRAP	FRANCEIA	CHLOROPHYTA	3115		
	100	GOLENKINIA	CHLOROPHYTA	3115		
	SCE	SCENEDESMUS	CHLOROPHYTA	31150		
	SCH	SCHROEDERIA	CHLOROPHYTA	9115		
	ACE	ACHNANTHES	CHRYSOPHYTA	18690		
•	10/0	CYCLDTELLA	CHRYSOPHYTA	3115		
	JAR	JS IRA	CHRYSOPHYTA	168210		
	NAN	NAVICULA	CHRYSOPHYTA	3115		
	71 N	NITZSCHIA	CHRYSUPHYTA	3115		
	STAL	JAONE 1 S	CHRYSOPHYTA	3115		
	STE	TEPHANDD ISCUS	CHRYSOPHYTA	18690		
	SYN	YNEDRA	CHRYSOPHYTA	9345		
	AVA	AVABAENA	CYANDPHYTA	71645		
	ANA(	ANACYSTIS	CYANDPHYTA	146405		
	HER	1ER I SHOPED I A	CYANDPHYTA	12460		
	1080	SCILLATORIA	CYANDPHYTA	15575		•

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Bernesser RIVERSTENNESSEE RIVER RIVEHILEB345;2	TAXON	CHLAMYDOMONAS	CHLORELLA	CACCICEZIA	FRANCE I A	HYALOTHECA	00CYST1S	PLANKTOSPHAERIA	SCENEDESKUS	SCHROEDERJA		MELOSIRA	SUSSIOD#AH9318	SYMEDRA	ANABAEZA	BNACYSTIS	CHRODCOCCUS	DAC14 LOCOCCOPS 1S	MERISHOPEDIA	OSCILLATURIA	CAYPTOCLENA

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	<b>₩</b> DX4	GROUP	MEAN
	ACTINASTRUM	CHLORGPHYTA	29073
	ANKISTRODESHUS	CHLOROPHYTA	2076
	BRACTEACOCCUS	CHLOROPHYTA	3115
	NANDED SAYOUTE A	CHLOROPHYTA	74760
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	COSMARIUM	CHLCROPHYTA	2076
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	GOLENKAN	CHLOROPHYTA	18690
	HYALOTHECA	CHLOROPHYTA	20766
	X I WCHNEW I BLLA	CHLUROPHYTA	50878
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	DUADRICULA	CHLOROPHYTA	6230
	SCENEDESMUS	CHLOROPHYTA	116293
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	STEPHANDDISCUS	CHRYSOPHYTA	29073
	SYZEORA	CHRYSOPHYTA	16613
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BISSURVEY DISTERNATION OF THE PROPERTY OF THE	RIVER STV. MILEBSSO.O	DK#DC#K#S 0	027E=19409+27	REP_NUMB2 section to the transfer of
	その人 はい	GROUP	r D Z	
	CHLAMYDOMONAS	CHLOROPHYTA	90335	
	CHLORELLA	CHLCROPHYTA	3115	
	CHOOATELLA	CHLOROPHYTA	9345	•
	CLOSTERIOIUM	CHLOROPHYTA	3115	
	DICTYOSPHAERIUM	CHLCROPHYTA	152635	
	GOLENKINIA	CHLOROPHYTA	9345	
	HYALOTHECA	CHLURDPHYTA	62300	
-	KIRCHNERIELLA	CHLCROPHYTA	6230	
	PADTOCOCCUS	CHLOROPHYTA	56070	
	SCENEDESMUS	CHLOROPHYTA	62300	
	SCHROEDERIA	CHLURDPHYTA	3115	
	SELENASTRUM	CHLOROPHYTA	3115	
	ACHRANTHES	CHRYSOPHYTA	15575	
	COCCOMEIS	CHRYSOPHYTA	6230	
	MELOSIRA	CHRYSOPHYTA	601195	
	RH120SOLEN1A	CHRYSDPHYTA	3115	
	STEPHANDOISCUS	CHRYSOPHYTA	40495	
	SYNEDRA	CHRYSOPHYTA	62300	
	ANARAENA	CYANDPHYTA	168210	
	ANACYSTIS	CYANDPHYTA	747600	
	CHRODCOCCUS	CYANDPHYTA	49840	
	DACTYLOCOCCOPSIS	CYANDPHYTA	6230	
	LYNGBYA	CYANDPHYTA	3115	
	MER   SMOPEDIA	CYANDPHYTA	1345680	
	OSCILLATORIA	CYANDPHYTA	28035	
	CRYPTOGLENA	EUGLENDPHYTA	6230	

12 N 20 15 12 13

REP.NUMB1 CHILLIANT CONTRACTOR

## DDT TASK S PHYTOPLANKTON LISTING

DATE=79-09-27	
SAM_LOC=AD	
RIV_HILE=350.0	
RIVERSTENNESSEE AIVER	
RIV	

X D Z	ě	34	=	4	64	=	21805	40	916	Ξ	22	378	311	6	623	23	:	738	6	=	=	=	Ξ	25	#	Ξ	=	295	26	4017	325	803	623	972	40
GNOUP	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	CHLORDPHYTA	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLDROPHYT	HLORUPHYT	HLOROPHYT	HLUROPHYT	HLOROPHYT	HRYSDPHYT	HRYSOPHYT	HAYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	YANGENAY	YANDPHYT	YANDPHYT	YANDPHYT	YANGPH	YANDPHYT						
TAXON	4L AMYCO	H JAEL	US * AR IU	30C1GE11	ICTY0SP	RANCEIA	LENKINI	<b>TALOTH</b>	I REHNER I	DCYSTI	ANKTOSP	ACT DC DC CU	TEROMON	EVEDESM	TALRASTRU	ETRAEDRO	ATO CREE	CHUANTHE	HAETOCER	CC DIVE 1	INDARYD	RAGILAR	MUNDHAND	ELOS 1R	AVICUL	1 T Z S C H I A	12050	S I GONAHOS I	YESHI	VABAEN	MACYSTI	AR DOCOCCUS	ACTYLOCOCC	ER ISM	SCILLATORI

**************************************	A I VEA	0.02683.1M.V.F	SAMINDC MAN	047E#79#69#27	REP_NUMEZ FFFF
	NO KTS		GROUP	X S	
	CHLAN		CHLOROPHYTA	90335	
	CHLOR		CHLOROPHYTA	3115	
	CHOOL		CHLOROPHYTA	9345	
	CLOST	CLOSTERIOIUM	CHLOROPHYTA	3115	

8	=	34	=	69	34	30	23	607	62300	=	=	57	23	61	=	640	230	6821	760	984	23	=	568	9	23	
HLOROPHYT	HLOROPHYT	H OROPHYT	HLOROPHYT	HLCROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	CHLOROPHYTA	HLOROPHYT	H_DROPHYT.	HRYSCPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	YANDDHYT	VANOPHYT	YANDDNAY	YANDDHYT	YANDDHAT	YANDDHYT	YANDDHYT	UCLENDPH	
<b>HEARYOD</b>	HLORELL	HODATELL	LOSTERIOI	1C TYOSPHAE	OLENKINI	YALOTHEC	1 RCHNER 1E	ADTOCOCCU	SCEMEDESMUS	CHROEDERI	ELENASTRU	CHUANTHE	OCCORE!	EL 35 1R	H12050	TEPHANDD1S	YNEDR	NABAE	MACYSTI	HROOCOCC	ACTYLOCOC	ANCOX	ER I SH	SCILLATORI	RYPTOGLEN	

## DDT TASK S PHYTOPLANKTON LISTING

REP_NUMBS OFFICE STATES
0ATE+79-09-27
SAM_LOC#AD
R RIV_MILE.350.0
RIVER TENNESSEE RIVE

NOM	607	2	934	3113	246	46	1869	34	03	623	95	7	-4	=	23	ŝ	311	34	7	492	57	_	361	492	1837	309	1246	492	23	7	~
GROUP	HLOROPHYT	HLOROPHYT	HLOROPHYT.	CHLOROPHYTA	HLOROPHYT	H_OROPHYT	HLOROPHYT.	HLOROPHYT	HLOROPHYT	HLUROPHYT.	HLOROPHYT	HLDROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLOROPHYT	HLORUPHYT	HLOROPHYT	HRYSOPHYT	MRYSOPHYT	HRYSOPHYT	HRYSOPHYT	HRYSOPHYT	YANDDHYT	YANDDHY	YANDPHYT	YANDDHY	YANDDHYT	UCL ENDPHYT	ă
TAXON	ACTINASTRUM	CHLAMYDOMONAS	CHLORELLA	CHODATELLA	CRUC 1 GEV 1 A	DICTYDSPHAERIUM	GOLENKINIA	HYALOTHECA	KIRCHNERIELLA	00075715	PROTOCOCCUS	OUADR I GULA		SCHROEDERIA		TETRASTRUM	TREUBARIA	TROCHISCIA	UNIO GREEN #1	ACHNANTHES	MELDSIRA	=		SYNEDRA	ANAGAENA			÷.	-		EUGLENA

Table 5-8A

OCCURRENCE AND ABUNDANCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED DURING LATE SUPPRER/EARLY FALL

	•	O OSE MAI		F	C 3/5 M								
	1	×	~		X	~	HS5.9	HS5.37	HS2.4	HS1.3	BF1.2	104.0	10-0.0
		no/m³	1		o/ton		no/m	no/tow	no/m	no/m	no/tow	no/tow	Bo/a
Rotifera													
Asplanchna herricki	2,698	1,735	<b>586</b>	1,325	742	467	•	•	•	١	15,400	783	22
A. amphora	•	1	•	•	•	,	56	88	35	72	7,117	150	•
Bdelloidea sp.	•	٠	•	•	•	,	77	133	286	416	117	•	1
Beauchampiella sp.	•	1		,	•		56	92	7	ı	ı	•	1
Brachionus angularis	126	171	129	100	88	22	12	158	408	1,720	12,600	4,533	25
B. bennint	1	•	•	•	•	,	•	•	21	6	817	9,833	20
B. bidentata	1	•	•	1	٠		•	•	1,093	631	1,400	2,567	53
B. budapestinensis	31	∞	84	S	•	<b>5</b> 00	•	,	•		117		-
B. calyciflorus	•	•	9	•	22	117.	•	33	6,413	16,403	226,567	245,550	110
B. caudatus	11	20	28	•	ន	,	•	92	1,158	7,285	119,933	84,333	67
B. havenaensis	•	•	•	1	•	•	•	25	•	•	3,967	•	
B. nilsoni	•	•	1	•	ı	,	,	,	٣	1	350	850	1
B. quadridentatus	97	25	87	75	52	1	87	392	994	2,168	5,133	12,117	2
B. urceolaris	ı	•	r	ı	•	,	•	,	1	•	•	533	•
Cephalodella sp.	•	•	•	•	ı	1	J	22	m	•	•	1	•
Collotheca sp.	•	•	61	•	•	ı	1	,	•	1	•	1	•
Conochiloides sp.	9	28	9	•	S	,	•	1	•	•	117	•	81
Conochilus hippocrepis	•	•	1	ጸ	17	,	31	3,967	33	٥	•	28	•
C. unicornis	31	35	97	•	•	•	•	,	•	1	í	•	2
Epiphanes macroura	•	•	•	ı	•	,	8 8	3,225	43	16	•	•	:
E. pelagica	•	•	1	•	•	•	•	•	<b>%</b>	150	1	•	•
Euchlanis sp.	1	•	•	1	•	ı	79	1,000	21	1	•	•	7
Filinia longiseta	•	ı	•	•	•	•	~	67	11	18	233	,	•
es sb.	•	•	ı	•	•	•	1	•	,	ı	•	•	•
Hexartha mira	79	43	65	•	•	ı	•	1	•	•	•	317	•
.ds .⊞	39	٠	1	8	•	•	1	•	'n	13	117	•	,
Keratella cochientia	272	260	195	175	63	158	•	١	m	ı	350	,	2
K. Crassa	223	152	8	250	9	<b>10</b> 0	•	•	,	•	•	,	77
K. earlinge	22	8	12	20		•	1	•	1	•	•	•	•
K. serrulata	•	•	٠	•	•		28	75	•	•	*	,	,

Table 5-8A

OCCURRENCE AND ABUNDANCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED DURING LATE SUPMER/EARLY FALL (continued)

		TRM 350.0		. !	TRM 345.2								
	]	<b>z</b>  ~	<b>~</b>	11	¥ .	<b>~</b>	HS5.9	HS5.37	HS2.4	HS1.3	BF1.2	104.0	1CM0.0
		TO/B			no/tow		m/ou	no/tow	no/m	no/m	no/ton	no/tow	m/ou
Rotifera (cont.)													
Lecane sp.	•	•	•	22	•	•	£43	1,967	456	199	350	150	12
Monostyla bulla	•	1	•		•	•	•	33	1	•	117	•	•
· as · El	•	•	•		•	ı	19	675	105	22	117	ı	9
Mytilinia sp.	•	1	•		ı	•	•	158	77	6	•	1	•
Notholca sp.	•	•	•		ı	•		•	1	σ.	•	•	1
Platvias patulus	11	33			25	•	116	2,592	238	677	233	150	•
P. quadricornis	•	•	1		ı	•	109	4,267	229	335	1	ı	7
Ploesoma hudsoni	141	53	53		183	67	٠		•	1	1	•	11
P. truncatum	79	53	10		17	•	•		ı	1	1	•	•
Polyartha sp.	816	825	702		296	1,042	15	33	17	16	5,950	233	129
Rotaria sp.	1	•	ı		•	•	166	917	334	77		•	7
Synchaeta sp.	3,997	3,119	1,657		1,683	2,467	<b>8</b>	700	75	54	29,050	383	861
S. stylata	1	•	•		•	•	ı	1	•	1	•	•	1,008
Testudinella sp.	1	٠	•		,	1	30	1,175	115	95	1	150	
Trichocerca sp.	22	•	86		17	52	S	•	•	•	•	•	ı
Trichotria sp.	•	1	١		1	1	•	1	1	13	•	1	1
Contracted Rotifers	1	σ.	1		•	•	84	3,450	333	511	117	150	20
Cladocera													
Alona costata	•	•	-	32	•	•	-	33	•	•	-	•	•
Bosmina longirostris	14,578	9,862	7,285	31,400	20,167	8,017	٠	25			1,633	83	2,531
Camptocercus rectirostris	:	•	•	•	1	•	•	١	•	•	•	•	-
Certodaphnia lacustris	12	01	~	7	-	-	,	1	٠	1	1	•	1
C. (1smature)	21	90	4	225	-	17	07	242	•	ı	•	•	•
C. quadrangula	-	•	•	56	17	•	-	•	1	•	•	•	1
C. reticulata	•	•	•	1	t	•	٦	,	•	•	•	1	
Chydorus sp.	•	3	•	S	22	•	-	•	•	7	•	-	•
Daphnia ambigua	•	1	ı	•	•	•	1	•	•	•	•	•	1
D. parvula	-	1	1.	7	•	-	1	•	1	1	•	•	•

Table 5-8A

OCCURRENCE AND ABUNDANCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED DURING LATE SUMPER/EARLY FALL (continued)

	F	0 030		ļ	0 376 70								
		X X	æ	1	A P	<b>a</b>	HSS.9	HSS. 37	HS2.4	HS1.3	BF1.2	104.0	100
		no/m	-		no/tov	{	no/m	no/tow	m/ou	no/m	no/tow	no/ton	100 E
Cladocera (cont.)													
D. retrocurva	-4	,		•	1	:	ı	1	•	•	١	1	
D. (Immature)	-	-	-	22	ı	-	•	1	,	;	1	1	_
Diaphanosoma leuchtenbergianum	20	213	95	1,100	320	117	•	•	٠		120	155	•
Ilyocryptus (immature)	٠	•	٠		1	•	m	142	•	~	1	-	_
I. sordidus	•	•	•	1	ı	ŧ	'n	ſ	-	ı	ı	-	•
I. spinifer	1	7	-	25	-	•	<b>so</b>	25	1	•	-	7	~
Kurzia latissima	ſ	I.	•	1	•	•	1	1	3	•	•	•	.,
Leprodora kindrii	9	-	-4	10	ı	-	٠	ł	,	•	~	•	_
Leydigia acanthocercoides	•	•	•	•	•		1	•	1	ı	1	•	•
L. quadrangularis	•	•	•	1	,	•	•	,	,	1	1	-	•
Moina affinis	•		•	•	,	-	•		•	í	,	•	•
Moina minuta	~	١		•	,	-	•	•	,		,	•	•
M. (imature)	,	•	•	1	,	~	•	ı	,	•	,	•	•
Pleuroxus denticulatus	•	•	•	•	,	•	~	-4	•	ı	•	•	•
P. hamulatus	,	•		•	-	•	•	ı	•	1	١	•	•
Scapholebris kingi	,	•	1	-	-	,	•	1	,	•	١	•	•
Sida crystallina	~	~	-	18	m	~	•	1	,	•	1	,	•
Stmocephalus (immature)	11	~	•	~	-	•	-	28	,	1	•	,	•
S. serrulatus	1	٠	•	•	•	•	<b>~</b> 4	-	,	,	•	ı	•
Simocephalus vetulus	1	1	~	1	١	•	٠	~	•	•	1	1	•
Calanoida													
Calanoid (inmature)	31	12	14	\$\$	33	m	7	•	14	-	1	1	
Diaptomus dorsalis	ı	•	,	•	ı	,	1	•	•	1	-		•
D. pallidus	FH	٦	~	47	4	•	•	1	ı	7	-	1	
D. reighardi	~	~	-	~	•	,	-1	•	~	1 1	, <b>,-4</b>	•	
Osphranticum labronectum	•	•		:	•	,	i <b>1</b>	1	•	-		•	•

Table 5-8A

OCCURNEGCE AND ABUNCALCE OF ZOOPLANKTON TAXA IN SAMPLES COLLECTED DURING LATE SUBJER/FARLY FALL (CONTINUED)

		TRM 350.0			TRM 345.	- 1						•	
	4	no/m3	<b>*</b>	7	no/tow	<b>*</b>	HS5.9	#55.37 no/tow	HS2.4	HS1.3	BF1.2	104.0	100.0
Constitution of the second of												200	201
Section of the sectio	•	;	į			į							
Cyclopold (Immerure)	T. 302	9	234	2,225	1,783	1,200	499	3,842	1,108	475	380	1,000	37
Cyclops thomasi	•	ł	•	•	•	•	•	1	•	•	i	•	-
C. rubellus	1	١	•	•	٠	-	1	•	-	10	16	17	۰-
C. vernalis	12	2	-	179	108	133	,-	-	1 7	9	-	: 2	•
Ergasilus sp.	72	22	77	2	67	2	• •	۱ ۱	,	-	۰,۰	9 1	• 1
E. (innature)	63	x	×	S	1	1 1		٠	٠	• 1	157	•	
Eucyclops agilis	•	•	-	\$2	1	7	13	•	-	-	,	-	٠.
E. speratus	•	•	•	•	i		13	5	-	- ،	۰,	• -	• (
Macrocyclops albidus	-	1	1	,	•	-	-	36	- ۱		• •	4	ı
Kesocyclops edax	-	-	-	35	133	· 6	•	3 1	- ٠	<b></b>	٦.		٠-
M. leukarti	•	•	•	•	•	, 1	-	-	٠,	۱ ۱	• (	<b>)</b> (	• 1
Orthocyclops modestus	•	ı	ı	•	1	•	-	1 0	•	-		٠.	
Tropocyclops prasinus	-	•	21	œ	-	5	4	, 4 2	29	12	9	•	•
Baryacticolda													
Harpacticoid (immeture)	ı	1	•	22	11	•	4	25	-	7	•	•	•
Canthocamptus robertcokeri	•	•	4	•	•	•	-	-	~	-	•	-	ı
Mitocra lacustria	•	ı	•	•	<b>+</b>	1	•		•	•	•	•	•
Arguloide													
Argulus app.	•	1	•	1	1	•	•	•	1	•	•	,	
Kauplii	5,249	3,748	2,184	5,600	3,433	2,808	3,588	22,675	1,948	859	3,850	3.150	170
									i		•		ì

a presence of taxona absence of taxon1 = most abundant taxon

ZOOPLANKTON COMPOSITION

REPLICATE ANALYSIS RESULTS AND

CALCULATED MEANS 
LATE SUMMER/EARLY FALL SAMPLING

DOT TASK 5 ZODPLANKTON CALCULATIONS SEPTEMBER 24, 1979

\*

FARETS RIVER-INDIAN CREEK RIV_MILE BOOD.O		SAM_LOC#AJ	ŧ
TAXDN	GROUP	MEAN	
RGULUS S	NCH		
DSMINA LONGIROSTRI	OOC FRA	2531	
AMPTOCERCUS	DUCER		
APHNIA IMM.	OOCER	<b></b> 4	
APHILL RETRO	VOOCER		
TAPHANDSOMA LE	VOOCER	•	
LYDCRYPIUS IAM.	NOOCER DOCER	-4.	
LACKINIOS SVIILE		<b>→</b>	
EPTUDORA KINDT	44.000		
LEURDXUS HAHULA	LOCCER	• ~	
ALANDIDA 1MM.	EPODA	-	
YCLOPOIDA IMM.	EPOD	37	
YCLOPS BICUSPIDATUS THO	EPOD	<b>~</b> 4 :	
TOLORS VARICANS RU	EP 00	<b></b> .	
DIAPTOLOGY VALLEDON		-4-	
RGASILUS IMM.	EP00	• ~	
UCYCLOPS AGILI	6000		
ESOCYCLOPS ED	EPOD		
AUPL II	EP00	170	
ROPUCYCLOPS PRAS	E P 00		
BACHNA MEKKI	E 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	C 7	
BACKLONIC BRENIES	1 1 1 1 1		
RACHIONUS BIDENIAT	IFER	200	
RACHIONUS BUDAPEST	IFER		
RACHIONUS CALYCIFLORUS	FER	110	
RACHIDNUS CAUDATUS	IFER.		
RACHIDHUS HAVANAENSIS	FFER	••	
RACHIONUS QUADRIDENT	A 1	٥,	
CONDUIT DIDEN NO.	ROTIFER A	۵ چ	
NECOLING CONTINUES	IFER		
DNTRACTED ROTIFERA	I FER	20	
UCHLANIS SP.	TIFER		
ERATELLA C	DTIFER		
ERATELLA CRASS	DTIFER	<b>5</b> .	
ECANE SP.	21.10 21.10 21.10		
DAUSTILA SP.	1 1 F F F D	o 4	
LOESOMA HUDSON	ď	1	
DLYARTHRA SP.	TIFER		
OTARIA SP.	TIFER		
HAETA SP.	01 1 F		
YNCHAETA ST	TIFER	8007	

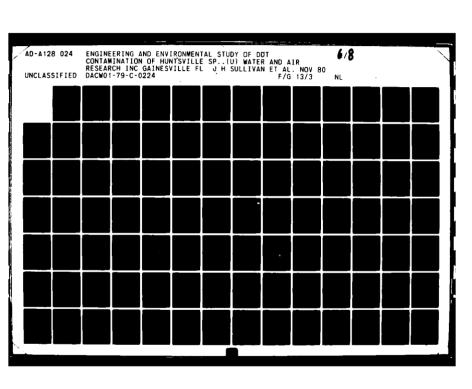
DDT PASK 3 ZDOPLANKTON LISTING SEPTEMBER 24, 1979

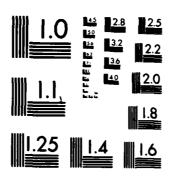
NOIAN	CREEK	YEAR-79	RIV_HILE-000.0	SAM_LOC#AJ	KN#09	REP_NUMA1
	TAXON			GROUP	X Z	
	9054INA	DSMINA LONGIROSTRIS	RIS	CLADOCERA	1846	
	OIAPHAN	DSDMA LEUC	CCCNVA LEUCHTENBERGIANUM	CLADECFRA		
	ILYDCRYE	TUS SPINIF	F F F F	CLADUCERA	•	
	KURZIA 1	LATISSIMA		CLADOCERA	• •	
	PLEURGXUS HA	JS MAMULATUS	CS	CLADGCERA	•	
	CALANDIO	OA INA.		COPEPDOA		
	CYCLOP3	IDA IMM.		CUPEPCOA	69	
	CYCLOPS	VARICANS	ARICANS RUBELCUS	COPEPCOA	8	
	DIAPTOM	JS PALLIDU		COPEPODA	-4	
	ERGAS1L:	.S. 1348.		COPEPODA		
	EUCYCLOS	PS 46:L1S		COPEPOOA		
	4ESDCYCI	w		COPEPODA	-	
	NAUPLII			COPEPODA	121	
	TROPOCY(	CLOPS PRASINUS	INUS	COPEPODA	~	
	ASPLANCE	HAM HERRIC	. x	ROTIFERA	35	
	BRACHIO	AUS ANGULA	RIS	ROTIFERA	94	
	BRACHIO.	TOS BENNIN	-	ROTIFERA	12	
	BRACHIO	YUS BIDENT	ATA	ROTIFERA	17	
	BRACHIO	AUS CALYCI	FLORUS	ROTIFERA		
	BRACHIO.	THOS CAUDAT	CAUDATUS	ROTIFERA	75	
	BRACHIONUS QUA	TOS GUADRI	QUADR I DENTATUS	ROTIFERA	28	
	COLLOTH	,		ROTIFERA	•	
	THURSON OF	2		ROTIFERA	35	
	CUNTRAC	-	X	ROTIFERA	12	
	EUCHLANIS	15 SP.		ROTIFERA	•	
	KERATELI	LA COCHLEA	RIS	ROTIFERA	•	
	KERATELLA	LA CRASSA		ROTIFERA	17	
	MONOSTA	A SP.		ROTIFERA	•	
	PLATYIAS		RIS	ROTIFERA	12	
	PLDESOMA	A HUDSON!		ROTIFERA	. 11	
	LYAR				53	
	SYNCHAE	ETA STYLATA			710	

### DDT TASK S ZOOPLANKTON LISTING SEPTEMBER 24, 1979

REP_NUMB2																											
60 N	NC.	1623	<b>6</b>	***	-	(	35	4 6	113	•	16	0	11	*	96	43	•	00	21	94	36	27	21	•	129	31.	707
SAM_LOC+AJ	GROUP	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	COPEPODA		CUPEPODA	LOPEPODA	COPEPOUA	ROTIFERA	RUTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
RIVER.INDIAN CREEK YEAR. 79 RIV. HILE. 000.0	TAXON	BOSMINA LONGIROSTRIS CAMPITORREUS RESTIROSTRIS	DAPITIES ITE	LEUCHTENBERGIANUM	ž.	CALANDIA JAN	0 9 d - d - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -		ZAUPLI II	TROPOCYCLOPS PRASINUS		ANGULARIS		BRACHIDNUS BUDAPESTIMENSIS	_	BRACHIONUS CAUDATUS	BRACHIONUS HAVANAENSIS	BRACHIONUS QUADRIDENTATUS	CONDCHILDIDES SP.	CDNDCHILUS UNICORNIS	CONTRACTED RUTIFERA	KERATELLA COCHLEARIS	KERATELLA CRASSA	PLOESD4A HUDSONI	POLYARTHRA SP.	SYTIC AETA SP.	SYNCHAETA STYLATA

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STREET STREET STREET STREET STREET STREET		YEAR=79	RIV_MILE-000.0	SAM_LOC-AJ	4 N	REP_NUM=3	REP_NUMES SPECIFICATION
	TAXON			GROUP	NCH		
	ARGULUS	ARGULUS SP.	4	BRANCHIURA			•
	DIAPHAND	SOMA LEUC	DIAPHANDSOMA LEUCHTERBERGIANUR	CLADOCERA	4125		
	ILVOCRYP	ILYDCRYPTUS SPINIFER	FER	CLADGCERA	:-		٠
	KURZIA LATISSIMA	4715517A		CLADOCERA	•		
	CEPTUDOR!			CLADOCERA	• ~		
	PLEURDXUS	S HAMULATUS	SC	CLADOCERA			
	CACACOCCA COS	• 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		COPEPODA			
		EET WO		COPEPODA	12		
	CYCLOPS	CICLOYS BICOSPIDATON THOSE CYCLOPS VARICANS BURET IN	TOS TROMAS!	COPEPODA	<b>-</b>		
	DIAPTONUS	DIAPTONUS PALLIBUS		A CONTRACT	-4 -		
	DIAPTOMUS	S REIGHARDI		COPEPDDA	٠.		•
	ERGASILUS IMM.	NAM.		COPEPODA	•		
	NAUPL II			COPEPODA	278		
	TRUPOCYCI		INUS	COPEPODA	12		
	ASPLANCENA		-	ROTIFERA	24		
	BRACHIONUS		11S	ROTIFERA	36		
	BRACHIONUS			ROTIFERA			
	BRACHIONUS		ITA	ROTIFERA	9		
	BRACHIONUS		LORUS	ROTIFERA	. eo		
	BRACHIDNUS		25	ROTIFERA	• • • • • • • • • • • • • • • • • • •		
	BRACHIONUS		QUADR I DENTATUS	ROTIFERA	73		
	COLLOTHECA	A SP	•	ROTIFERA	12		
	SOLITION	S UNICORNIS	517	ROTIFERA	12		
	CONTRACTE	CONTRACTED ROTIFERA	4 :	ROTIFERA	12		
			<u> </u>	ROTIFERA	9		
	MEKATELLA CKASSA	CKASSA		ROTIFERA	36		
	4 17 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2			ROTIFERA	ě		
	# 43 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			ROTIFERA	12		
	PLUESUAN MOUSUN			ROTIFERA	12		
	AND			ROTIFERA	230		
	4 F U 4 T U 2 A A	-0		RUTIFERA	12		
	SYNCHAETA	STYLATA		ROTIFERA	2274		
		1			0		

DDT TASK S ZOOPLANKTON CALCULATIONS SEPTEMBER 24, 1979

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TO THE REAL PROPERTY OF THE PARTY OF THE PAR

RIVER-HUNTSVILLE SPRING BRANCH RITAKON TAKON CHYDORUS SP.	RIV-MILE-DOL.3	SAMLLOCHAN	
TAKDN CHYDDRUS SP.			
CHYDORUS SP.	GROUP	REAN	
	DCFR		
DIAPTANDICTA LEUCHTENBRAGIANCE	CLADOCERA	• ~	
1LYDCRYPTUS 1MM.	DOCER		
	900	-	
CANTHOCAMPTUS ROBERTCOKER:	8		
·	8	475	
CYCLUPS VARICANS RUBELLUS	COPEPODA	2	
CYCLOPS VERNALIS	8	•	
DIAPTONUS PALLIDUS	8		
ERGASILUS SP.	8		
L 1 S	8		
œ	500	-	
HH.	8	-	
•	8		
<b>Q</b>	80		
	900	850	
<b>MOF</b>	90	-	
LABR	8		
PRASINUS	004		
P HOR	Ŧ	22	
	3	7	
AKCULA	3	1720	
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S	7	0	
BRACHIONUS CAUDATUS	3	28	
TO HAVANAENS S	3	٠,	
<u> </u>	_		
CONTRACTOR			
S SELACIONO		7	
LONGISETA		<b>\</b> -	
SP.			
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•	1	·N	
S	FE		
DTHOLCA S	ROTIFERA	•	
PATUL	FE	674	
Œ	FER	335	
RA SP.	DTIFER	2	
ARIA SP.	OT I FE	77	
YNCHA	OTIFER	34	
ESTUDINELLA	OTIFER		
RICHOTRIA SP.	ROTIFERA	2	

 RIVER-HUNTSVILLE	SPRING BRANG	H YEAR=79	RIV_MIL	RIV_HILE=001.3	SAMLLOCFAG	1 00 00 00 00 00 00 00 00 00 00 00 00 00
	TAXON			GROUP	NCM	
	CHYDDRUS SP.	. SP.		CLADDCERA	-	
	CALANOIDA IMM.	A IMM.		COPEPODA		
	CANTHOCA	CANTHOCAMPTUS ROBERTCOKER!	COKERI	COPEPODA		
	CACTOBO	CYCLOPOIDA IMM.		COPEPODA	919	
	CYCLOPS	CYCLOPS VARICANS RUBELLUS	ELLUS	COPEPODA	~	
	CVCLOPS	CYCLOPS VERNALIS		COPEPOOA		
	DIAPTOM	DIAPTOMUS PALLIBUS		COPEPODA		
	EUCYCLOS	'S AG1L 15		COPEPODA		
	EUCYCLOS	EUCYCLOPS SPERATUS		COPEPUDA		
	MAKPACT	HAKPACTICOID IHM.		COPEPODA		
	MESOCYCI	MESOCYCLOPS EDAX		COPEPODA		
	NAUPL 1			COPEPODA	1071	
	TRUPOCY	RUPOCYCLOPS PRASINUS		COPEPUDA		
	ASPLATCH	ASPLATCHNA AMPHORA		ROTIFERA	12	
	BDELLOIDEA	EA		ROTIFERA	576	
	BRACHIONUS			ROTIFERA	•	
	BRACHIDINS			ROTIFERA		
	BRACHIONUS	IUS CALYCIFLORUS	VUS VUS	ROTIFERA	18653	
	BRACHIONUS			ROTIFERA		
	BRACHIONUS		<b>ratus</b>	ROTIFERA	2924	
	COLOCHILUS	US HIPPOCREP!	2	ROTIFERA	1,	
	CONTRACT			RUTIFERA	919	
	EPIPHANES			ROTIFERA		
	EPIPHANES	S PELAGICA		ROTIFERA	288	
	HEXANTHRA SP.	A SP.		ROTIFERA		
	LECANE SP.			ROTIFERA	329	
	MONOSTYLA SP.	A SP.		ROTIFERA	7	
	PLATYIAS	PLATYIAS PATULUS		ROTIFERA	782	
	PLATVIA	PLATYIAS QUADRICORNIS		ROTIFERA	464	
	ROTARIA SP.	SP.		ROTIFERA	124	
٠	SYLCHAE	A SP.		ROTIFERA	29	
	TESTUDIA	restudinella SP.		ROTIFERA	124	
	TRICHOTRIA SP.	IA SP.		ROTIFERA	.,	

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DDT TASK S ZOOPLANKTON LISTING SEPTEMBER 24, 1979

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SAM_LOC#AD	X CX	<b>##</b>	1 -4 -4	946	27	. e-4 .			-		15	27	3,4	215	1150	458	16719	3958	7761	272	323	18	10	162	27	212	269	108	27	6
	GROUP	CLADOCERA CLADOCERA CLADOCERA	COPEPODA	OPEPODA	COPEPODA	OPERODA	COPEPODA	OPEPODA	COPEPODA	10PEP00A	OPEPON.	COPEPODA	LOTIFERA	ROTIFERA	FERA	ROTIFERA	ROTIFERA	ROTIFERA		ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
RIV_HILE=001.3	3	CLAD	360	200	900	COPE		COPE	200				ROTI	ROT	202	ROT	KOT	X0X	2 6	204	ROT	ROT	<b>20</b>	ROT	ROT	ROT	ROT	ROT	ROT	ROT
YEAR=79		CHYDORUS SP. Diaphandscha Leuchtenbergianum Rynoryptus imm.	CALANDIDA 1MM. CANTHOCAMPTUS ROBERTCOKER!	DA IMM.	CYCLOPS VARICANS RUBELLUS Cyclops Vernalis	DIAPTONUS PALLIDUS	ERGASILUS SP. Bucyclops agilis	EUCYCLOPS SPERATUS	HARPACTICOTO 1MM.	MACRUCYCLOPS ALBIDOS		TROPUCYCLOPS PRASINUS	ASPLANCHMA AMPHORA					IUS CAUDATUS			ED ROTIFERA	EPIPHANES MACROURUS	EPIPHANES PELAGICA	<b>a.</b>	HYTILINA SP.	PATULUS	PLATYIAS QUADRICORNIS	RA SP. SP.	A SP.	TESTUDINELLA SP.
SPRING BRA	TAXON	CHYDGRUS DIAPHAND	CALANDIDA IMM.	CYCLUPGIDA IMM.	CYCLOPS	DIAPTON	ENGASILU	EUCYCLOP	MARPACTI	MACRUCYC	NAUPL 11	TROPUCYC	ASPLANCH	BOELLOZOEA	BRACHIDAUS	BRACHIONOS	BRACHIDAUS	SOND THE STATE OF		SOJIHOGNOO	CONTRACTED	EP IPHANE	EPIPHANE	LECANE SP.	MYT IL INA	PLATYIAS	PLATYIAS	ROLVARIHRA SP	SYNCHAETA SP.	TESTUDIA
RIVER-HUNTSVILLE SPRING BRANCH													•																	

DOT TASK S EDDPLANKTON LISTING SEPTEMBER 24, 1979

DDT TASK S ZODPLANKTON CALCULATIONS SEPTEMBER 24, 1979

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MANOS ASSESSED			•		-																								•											
SAM_LDC.AJ	HEAN	•••	•	•	1108		◆•	-• .	-•	• ~	•		1946	58	<b>S</b> C (	987	- 604	-	1093	6413	1150	•	76		33	333	<b>*</b>	<b>7</b>		- <b>•</b>	_	436	105	**	236	27	334	25	211	•
RIV_HILE4002.4	GROUP	CLADDCERA	COPEPODA	COPEPODA	COPEPODA	COPEPOOA	COPEPUDA	4004H00		COPERCIOA	COPERODA	COPEPODA	COPERCOA	CDPEPODA	ROTIFERA	70	ROTIFERA	ADT 1 FEBA	ROTIFERA	ROTIFERA	ROTIFERA	RUI IPERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA							
RIVER-HUNTSVILLE SPRING BRANCH	4AXDN	BOSMINA LONGIACISTAIS	CALANDIDA IME.	CANTHOCAMPTUS ROBERTCOKERI	CYCLOPOIDA IMM.	CYCLOPS VARICANS RUBELLUS	CYCLOPS VERMALIS	DXAKOT MA	RUCHULOTA MOTULA	MARPACTICOID INS.	A1.8		NAUPL 11	•	ANDIAZA AZEZZA		• • •			-			DAPTHONG DOLDOR DERTATOR		CONDCHILUS HIPPOCREPIS	ROTIFERA	EPIPHAZES MACACURUS	METER AND	FILINIA LONGISETA	THY PAYEN ON	KERATELLA COCHLEARIS	•	۷,			POLYARTHRA SP.	ROTARIA SP.		TRICHOCERCA SP.	
79																																								

DOT TASK S ZOOPLANKTON LISTING SEPTEMBER 24, 1979

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60=XX																																						
SAM_LOC.AJ	NCA	-4	<b>4</b>	-	1322			• -	•		•	•	2314		21	331	77	556	1839	10723	1426	1364	21	42	393		999	63	7	537	227	. 79	351	434	14	9	145	103
RIV_HILE-002.4	CROUP	CLADOCERA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	ROTIFERA
RIVERI				OKERI	•	5077	: :													SO		ATUS		s														
YEAR=79		LYCCRYPTUS SORDIOUS	IHI.	CANTHOCAMPTUS ROBERTCOKERI	MH.	CYCLOPS VARICANS RUBELLUS	RNAL 15	AG11 1S	SPERATUS	ID IKM.	PS ALBIDUS	S EDAX		TRUPOCYCLOPS PRASINUS	AMPHORA		LLA SP.	ANCUL AR 15	BIDENTATA	CALYCIFLORUS	CAUDATUS	QUADRIDENTATUS	URCEDLAR 15	HIPPOCREP 15	ROTIFERA	MACROURUS	PELAGICA	sp.	NGISETA		sp.	•	PATULUS	PLATYIAS QUADRICGRNIS	SP.		59.	LA SP.
SPRING BRANCH	TAXON	ILYGCRYPTU	CALANDIDA	CANTHOCAMP	CYCLOPOIDA IMM.	CYCLOPS VA	CYCLOPS VERNALIS	FUCYCLOPS	EUCYCLOPS SPERATUS	MARPACTICOID INM.	MACROCYCLOPS ALBIDUS	MESOCYCLOPS EDAX	NAUPL 1	TRUPOCYCLD	ASPLANCHNA AMPHORA	BOELLGIDEA	BEUCHAMP 1E	BRACHIUNUS ANGULARIS	BRACHIONUS	BRACHIONUS	BRACHIONUS	BRACHIONUS	BRACHIONUS	CONDCHILUS	CONTRACTED			EUCHLANIS	FILINIA LONGISETA	LECANE SP.	MONDSTYLA SP.	HYTILINA SP.	PLATYIAS P.	PLATYIAS Q	POLYARTHRA	ROTARIA SP	SYNCHAETA	TESTUDINELLA
RIVER-HUNTSVILLE																																						
PITTITITITITITITITI BIVER WUNTSVILLE SPRING BRANCH																																						

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DDT TASK 9 200PLANKTON LISTING SEPTEMBER 24, 1979

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	NON	-4-	•	2	982					-		1765	10	69	343	144	33	980	5752	1422	1127	91	392	16	7 * *	64	96	91	523	64	147	163	261	4	190	91
	GROUP	CLADCCERA	ACCEPTON	COPEPUDA	COPEPODA	COPEPUDA	COPEPUDA	COPEPODA	COPEPOCA	CUPEPUDA	COVEPUDA	COPEPODA	COPEPODA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	RUTIFERA	RUTIFERA	ROTIFERA	RDTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	RUTIFERA	ROTIFERA	RUTIFERA	ROTIFERA
	TAXON	BOSMINA LONGIROSTRIS	*EET GOTOGUE	CANTHOCAMPTUS ROBERTCOKER!	CYCLOPOIDA IMM.	CYCLOPS VARICANS RUBELLUS	CYCLDPS VERNALIS	DIAPTORUS REIGHARDI	EUCYCLOPS AGIL15	EUCYCLOPS SPERATUS	MESOCYCLOPS EDAX	NAUPL ? I	TROPOCYCLOPS PRASINUS	ASPLANCHTA AMPHORA	BOELLOTOEA	BRACHICICS ANGULARIS	BRACKIONUS BERNINI	BRACHIONUS BIDENTATA	BRACHIONUS CALYCIFLORUS		BRACHIDING GUADRIDENTATUS	CONDUNITION HIPPOCREPIS	CONTRACTED RUTIFERA	RPIPHANES MACADURUS	EPIPHANES PELAGICA	EUCHLANIS SP.	FILINIA LONGISETA	MEXARTIRA SP.	LECANE SP.	MONDSTYLA SP.	PLATYIAS PATULUS .	PLATYIAS QUADRICORNIS	ROTARIA SP.	SYNCHAETA SP.	•	TRICHDOERCA SP.

#### DDT TASK 3 ZODPLANKTON LISTING SEPTEMBER 24, 1979

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SAM_LOC=AJ	E S		1120	~ <u>°</u>	-			•	10/1	21	185	226	16	8			473	2	12	912	7/ 80E	21	92	2	308	<b>;</b>	2:	610 617	2	103	31	20
RIV_HILE#002.4	GROUP	COPEPOOA	COPERDOA	COPEDIDA	COPEPODA	CUPEPUDA	CUPEPODA	A COP R P COP	COPERCOA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	A X 4 4 4 5 0 0	ROTIFERA	ROTIFERA	RUTIFERA	RUTIFERA	RUTIFERA	RUTIFERA	ROT LERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	AUT TEKA
**************************************	TAXON	CALANDIDA 1MM.	DA IMM.	CHILLDRA WASHINGTON AND THE CONTINUE OF THE CO	EUCYCLOPS AGILIS		STOCKCLOPS ALBIDOS	TROCTCEUT BOAY	TADPOCYCLOPS PRASINUS	ASPLANCHNA ANDHORA		BARACTIOSCO ANDICENS						CEPYALODELLA SP.	Signification Chicagon Control	4XULT-074		EUCHLANIS SP.	FILINIA LONGISETA	KERATELLA COCHLEARIS	•			PLATYIAS SCADALS	POLYARTHRA SP.	ROTARIA SP.	•	ISSIDURELLA SY.

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DOT TASK 5 ZOOPLANKTON CALCULATIONS SEPTEMBER 24, 1979

•	TAXDN	GROUP	MEAN	
•				
•	ALCOSTATA		÷	
•	APHRIA	CLADOCFRA	-9	
		CLADGCERA	-	•
		CLADCCERA		
•		CLADOCERA	) ~ <b>4</b>	
	1LYDCAYPTUS IMM.	CLADUCERA	•	
	1LYDCRYPTUS SORDIDUS	CLADOCERA	<b>6</b> 7	
•	ILYOCRYPTUS SPINIFER	CLADGCERA	. =	
	PLEURDXUS DENTICULATUS	CLADUCERA	•	
	SINDCEPHALUS IMM.	CLADICERA		
	SIMOCEPHALUS SERRULATUS	CLADOCERA	•	
	CALANDIDA IMM.	COPEDODA	s	
	CANTHUCAMPTUS ROBERTCOKERT	COPFEDDA	•	
	CVCI DEDITION THM.	400000	• 007	
	CACADO ARRANALA		-	
			• -	
	こうにんてき しょうしょうしょう	4004100	<b></b> •	
	EUCTCLUPY AGILIS	COPERUDA	F (	
	EUCYCLUPS SPERATUS	COPEPUDA	2	
	HARPACTICOTO IMM.	COPEPOUA	•	
	MACROCYCLOPS ALBIDUS	COPEPODA		
	w	COPEPODA		
	MESDCYCLOPS LEUCKARTI	COPEPODA		
		COPEPODA	3588	
	ORTHOCYCLOPS MODESTUS	COPEPODA		
		COPERCIOA	•	
	*	ROTIFERA	20	
	BDELLOIDEA	ROTTERA	1	
	PETERSONE A CO	8041E88		
	PATE AND	400000000000000000000000000000000000000		
	BRACHIONUS CAUDATUS	ROTIFERA	40	
	BRACHTONUS DUADRIDENTATUE	BUTTERA		
		40111100	) -	-
	CONTRACTED ROTTERA			
	EPIPHANES HACROURUS	ROTIFFAA		
	SP.	ROTIFERA	2	
	_	AOTIFFAA	•	
	KERATELLA SERRULATA	ROTIFERA		
	LECANE SP.	ROTIFERA		
	MONDSTYLA SP.	ROTIFERA	6	
	PLATYIAS PATULUS	ROTIFERA	116	
	PLATYIAS QUADRICORNIS	ROTIFERA	109	
	POLYARTHRA SP.	ROTIFERA	57	
	ROTARIA SP.	ROTIFERA	100	
	SYNCHAETA SP.	ROTIFERA	0	
	TESTUDINELLA SP.	ROTIFERA	30	
	TRICHDCERCA SP.	ROTIFERA	_	

DOT TASK S 200PLANKTON LISTING SEPTEMBER 24, 1979

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	WN=09																																							
	SAM_LOC#AJ	NON		22			-		::	-	-			-4	463	22	11	-	-	-	3419		7	22	22	22	22	7	9	93	419	110		9	;	121	9	221	66	
4/47	RIV_HILE=005,9	CROUP	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	GLADDCERA	CLADOCERA	COPEPODA	COPERJOA	COPEPODA	CUPEPOCA	COPERODA	CUPEPODA	COPEPODA	COPEPODA	CUPEPOOA	COPEPODA	COPEPODA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	RUT 1 FERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	RUTIFERA	ROTIFERA	
SEPTEMBER 24, 1979	RIV_HI				IGULA	ATA				SO.		TUS		COKER!	•							2	~					ITATUS	115								<b>.</b>	,		
SEPTE	YEAR=79		TA.	A IMM.	A QUADRANGULA			ILYDCAYPTUS IMM.	SPINIFER	PLEURDXUS DENTICULATUS	IS INM.	SIMOCEPHALUS SEARULATUS	. XX	CANTHOCAMPTUS ROBERTCOKER!	IMM.	611.15	PERATUS	. KH1 0	S ALBIDUS	EDAX		DATHOCYCLOPS MODESTUS	S PRASINUS	AMPHORA		BEUCHAMPIELLA SP.	ANGULAR 18	QUADRIDENTATUS	HIPPOCREPI	ROTIFERA	ACROURUS	sp.	SERRULATA			TULUS	QUADRICORNIS		SP.	
	BRANCH	TAXON	ALONA COSTATA	A I ODAPHY I	CER I DDAPHNIA	CERIODAPHNIA	CHYDORUS SP.	YOCAYPTUS	YOCRYPTUS	EURDXUS D	SIMUCEPHALUS IMM.	MUCEPHALU	CALANDIDA 1MM.	NTHOCAMP1	CYCLOPOIDA IMM.	EUCYCLOPS AGILIS	EUCYCLOPS SPERATUS	HARPACTICOID IMM.	MACROCYCLOPS	MESOCYCLOPS EDAX	NAUPL 11	THOCYCLOP	TRUPDCYCLOPS	ASPLANCHNA AMPHORA	BDELLOIDEA	<b>UCHAMPIEL</b>	ACHIONUS	BRACHIONUS	SOUTHOUSE	CONTRACTED			KERATELLA S	LECANE SP.	NOSTYLA S	ATYIAS PA	PLATYIAS QUADRICOS	ROTARIA SP.	SYNCHAETA S	
	E SPRING	4	AL	3	3	CE	IJ	=	=	4	S	51	CA	CA	<b>`</b>	DE C	E	I	¥	HE	Z	ő	<b>*</b>	Y V	9	96	<b>4</b>	20	5	S	e e	3	¥	3	?	٦	2	2	S	
	RIVER-HUNTSVILLE SPRING BRANCH															-																								

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DDJ TASK S 200PLANKTON LISTING SEPTEMBER 24, 1979

W. ...

REP.NUH-2
O I N
SAM_LOCHAJ
RIV_MILE=005.9
YEAR= 79
SPRING BRANCE
RIVERTHUNTSVILLE

NUM	<b>B</b> 44044			2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GROUP	1 A D O C C C C C C C C C C C C C C C C C C		UPEPUD DPEPUD DTIFER DTIFER DTIFER	
TAXON	ERIDDAPHNIA IMM ERICDAPHNIA QUA LYOCKYPTUS SET LEUROCKUS DENICE IMOCEDALUS IMM	MACCEPTACOS A VCLOPOIDA 144. VCCLOPS AGIL UCYCLOPS AGIL VCCCLOPS SPER ACCYCLOPS LE	AUPLII RTHDOYCLOPS MODES SPLANCYCLOPS PRASII SPLANCYCLOPS PRASII DELLOIDEA EUCHAMPIELLA SP, RACHIONUS ANGULAN	BRACCHIONOS CONTACOS CONTACOS CONTACOS CONTACTED ROTIFERA EPIPHANES HAPPOCREPIS CONTACTED ROTIFERA ECCHLAIA SPACHAETA SPACHAETA SPACHAETA SPACHAETA SPACHAETA SPACHOCERCA SPACHOCERCA SPACHOCERCA SPACHOCERCA SPACHOCERCA SPACHOCERCA SPACHOCERCA SPACHAETA SPACHOCERCA SPACHAETA SP

words water and a

## DDT TASK 3 200PLANKTON LISTING SEPTEMBER 24, 1979

**************************************	ROBINTSVILLE SPRING BRANCH YEAR 79 RIV_MILE 005,9 SAM_LOCOAJ	YEAR#79	RIV_MILE*	6.500	SAM_LOC.AJ	WN BOO	AEP_NUMES
	TAXON			GRDUP	N U		
	CERIODAPHI	. IMM. AIT		CLADOCERA	32		٠
	CERIDOAPH	CERIDDAPHNIA QUADRANGULA		CLADOCERA			
•	CERIODAPH	ERIODAPHNIA RETICULATA	Ī	LADOCERA			
	ILYDCRYPTI	LYDCRYPTUS SPINIFER		LADOCERA	13		
	PLEURDXUS	LEUNDAUS DENTICULATUS	S	CLADUCERA	13		
	SIMOCEPHALUS IMM.	LUS IMM.		LADDCERA			
	CALANGIDA	HH.	ی	OPEPODA			
	CYCLOPOID	A LHM.	U	OPEPODA	556		
	CYCLUPS VERNALIS	FRNALIS	J	OPEPODA			
	DIAPTOMUS	RE 1 GHARD 1	U	CUPEPUDA			
	EUCYCLOPS	AG11.15	J	OPEPUDA	-		
	EUCYCLOPS	EUCYCLUPS SPERATUS	J	UPEPUDA	13		

CERIODAPHNIA OUADRANGULA CLADOCERA
ILYGORAPHNIA OUADRANGULA
CLADOCERA
ILYGORAPHNIA SETIECUATA
CLADOCERA
ILYGORAPHNIA SETIECUATA
CLADOCERA
ILYGORAPHNIS SPINITERA
CALANDIDA IHH.
CYCLOPS ACINIS
COPEPUDA
CYCLOPS ACINIS
COPEPUDA
ILHARPACTICOIU IHM.
CYCLOPS ACINIS
EUCYCLOPS ACINIS
COPEPUDA
ILHARPACTICOIU IHM.
CONOCHILUS HIPPUCREPIS
BRACHIONUS CAUDATUS
BRACHIONUS CAUDATUS
BRACHIONUS CAUDATUS
BRACHIONUS SRULATA
ROTIFERA
ILHAPES MACROURUS
EUCHANIS SP.
ROTIFERA
ILHAPEN POTULOS
ROTIFERA
ILHAPIS PATULUS
ROTIF

DOT TASK S ZODPLANKTON CALCULATIONS SEPTEMBER 24, 1979

TAXON	GROUP	MEAN
INA LONGIROS	3	14578
CALCANTA TATE	A 000C	
CONTRACTOR CONTRACTOR		7.
AND CONTRACTOR AND	A D C C C C C C C C C C C C C C C C C C	٠.
APENIA PARVUE	ADDOR	•
APKULA RETROCURV	LADOCFR	•
I AMDSCHAHARI	LAGGCER	501
EPTOORA KINDIII	LADOCE	
DINA MINUTA	LADUCER	
IDA CRYST	LADOCER	-
I MOCEPHALUS I	LADOCER	11
ALA	OPEPOD	<u>.</u>
VCLOPOTOA 1MM.	DPEPCO	1902
YCLUPS VERNALIS	ODEPCO	-
JAPTOMUS PALLIDUS	004340	-
IAPTOMUS REIGHAR	DPEPOD	
RGASILUS IM	DPEPDO	63
AGASILUS SP.	DPEPOD	72
ACROCYCLOPS	004340	<b>-4</b> ,
ESUCTCEUTS EUR	004400	i
404111 90406-00-00-00-00-00-00-00-00-00-00-00-00-0	00440	2249
ACTURE ACTURED	0072700	
DACHTONIA ANGLIA	X 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	860%
RACHIONUS BUDAPES	71111	4 6
RACHIDIUS CAUDATUS	TIFER	-
RACHIDIAUS QUADRIC	DTIFER	. 6
DNOCHILDIDES SP.	OTIFER	0
DNDCHILUS UNIC	DTIFER	
EXARTHRA MI	DTIFER	4
EXARTHRA SP.	DTIFER	39
ERATELLA COCHL	DTIFER	272
ERATELLA CRASSA	DTIFER	~
EKATELLA EAKLI	DTIFER	22
LATYIAS PATULU	DTIFER	~
LOESONA MUDSONI	4	141
COESCHA INCNEA	DTIFER	•
OCYAKIMKA V	OTIFE	=
VACHAETA SP.	DITFE	ው

# DOT T4SK 5 ZOOPLANKTON LISTING SEPTEMBER 24, 1979

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REP_NUM-1
00=ZX
SAMULDEMAE
RIVIMILE BOOD
YEAR# 79
RIVERSTENNESSEE RIVER
******

TAXON	GROUP	E O
DSMINA LONGI	ADDC ER	18765
ER IODAPHNIA I	ADDCER.	N
4	CLADCCERA	
APINIA IMM	ADUCER	~
APHILLA PARVUL	LADOCER	
APHILA RETROCUR	LADDCER	
POSCNAHGAI	LADOCER	154
EPTCOORA KINOTI	LABUCER	•
IDA CRYSTA	LACUCER	
ALACIOTAIA	DPEPOD	29
YCLGP3fDA I	OPEPCO	2206
YCLOPS VERNALI	OPEPOO	
TAPTOMUS PALLID	DPEPDD	-4
IAPTOMUS REIGHAR	DPEPOD	-4
AGASILUS 1MM.	OPEPOO	56
RGASILUS SP	004340	118
ESCCYC	004340	
AJ011	CPEPGO	5912
ROPOCYCLOPS PRAS	DPEPOD	•
SPLANCHNA HERRICK	DTIFER	2735
RACHIONUS ARGULARI	OTIFER	
RACHIDNUS BUDAPESTINEN	OTIFER	23
RACHIDNUS QUADRIDENTATU	OTIFER	
EXARTHAA SP.	OTIFER	~
ERATELLA COC	OTIFER	
ERATELLA CRASS	OTIFER	~
LDESOYA HUDS	UTIFER	
LDESONA TRUITCA	07 1 F E R	8
DEYARTHRA	OTIFER	
YNCHA	OTIFER	4471

DDT TASK 5 200PLANKTON LISTING SEPTEMBER 24, 1979

REP_NUM*2		•													-												•							
REP_NUM.																																		
WN-09	Z S	16873	35	32	,	625	•	-	35.	_	1875	35	-		69	69	-	6493		2986	139	86	35	174	208	243	243	35	35	243	104	1111	4271	35
SAM_LOCHAE	GROUP	CLADOCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADUCERA	CLADGCERA	CLADOCERA	CLADOCERA	COPEPUDA	COPEPCDA	COPEPODA	COPEPODA	COPEPDDA	COPEPODA	COPEPODA	COPEPODA	COPEPOOA	COPEPOOA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
TENNESSEE RIVER YEARATO RIV_MILE=350.0	TAXON	BOSHINA LONGIROSTRIS	CHRICOAPINIA IME.	CERIODAPHNIA LACUSTRIS	CERICOAPANIA QUADRANGULA	DIAPHANDSOMA LEUCHTENBERGIANUM	LEPTODDAA KIROTII	SIDA CRYSTALLINA	S. R.D.C. EPAPPOS TRR.	CALANDIDA IM.	CYCLOPOTON THA.	CYCLUPS VERNALIS	DIAPTOMUS PALLIDUS	DIAPTOMUS REICHARDI	ERGASILUS 18M,	ERGASILUS SP.	MESOCYCLOPS EDAX	MAUPL 11		ASPLANCHNA HERRICKI	BRACHIDAUS ANGULARIS				ARKANTIRA MIRA	KERATELLA COCHLEARIS	KERATELLA CRASSA	KERATELLA EARLINAE	PLATYIAS PATULUS	PLOESOMA HUDSON:	PLDESDMA TRUNCATA	POLYARTHRA SP.	SYNCHAETA SP.	TRICHDCERCA SP.

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- Proceedings of the

# DOT TASK 9 LOGPLANKTOW LISTING SEPTEMBER 24, 1979

TAXON  BOSHINA LONGIROSTRIS  CERIODAPHNIA 1HH,  CERIODAPHNIA 1HH,  DAPHNIA ARTROCURVA  DIAPHNIA ARTROCURVA  DIAPHNIA ARTROCURVA  DIAPHNIA ARTROCURVA  DIAPHNIA ARTROCURVA  CERIODAPHNIA LEUCHTENBERGIANUM  LETADORA KINDTII  MOJINA YINUTA  STOA CRYSTALLINA  CYCLOPJOA IHH,  CYCLOPJOA IHH,  CYCLOPS VERBALIS  DIAPTOHUS PALLIOUS  DIAPTOHUS PALLIOUS  HESOCYCLOPS EDAX  WADDLII  TROPOCYCLOPS PRASINUS  ASPLANCHMA HERRICKI  BRACHIONUS ANGULARIS  BRACHIONUS ANGULARIS  BRACHIONUS ANGULARIS  CONOCHILUS UNICORNIS  HEXARTHRA MIRA  KERAFELLA COCHEARIS  KERAFELLA CACHEARIS  KERAFILLA CACHE	৯ ব ১ ১ বৰ্বৰ্বৰ		M M M M M M M M M M M M M M M M M M M	
	ACTIFERA ROTIFERA ROTIFERA ROTIFERA	94 719 3250 31		

Company of the second of the s

DOT TASK S ZOOPLANKTON CALCULATIONS SEPTEMBER 24, 1979

																					•													
	SAM_LOCAAJ	MEAN	9862	2	4	213		-	~	• •	9	91	<b>-</b>	-	33	5			1735	171	•	2:	N 6	28	33	•	43	260	152	9 6		P 6	7 7	3119
1919	AIV_HILE#350,0 SAM	GROUP	CLADCCERA	CLADDCERA	CLADOCERA	CLADOCERA	CLADUCERA	CLADUCERA	CLADOCERA CLADOCERA	COPEDOA	COPERCOA	COPEPODA	COPEPDOA	COPEPCIOA	COPEPDOA	COPEPODA	COPEPOOA	COPEDIA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	A 2 1 1 1 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	AX07.04	4 X D 4 T 1 D 4	AU-1768		ROTIFERA
PEOT LEONALD TO CREATURE OF COLORS	Reso RIVERSTENNESSEE RIVER BIV_HI	TAXON	BOSHINA LONGIROSTRIS CERICOAPHNIA IMM.	CERIDOAPHNIA LACUSTRIS	CHYDURUS SP.	DIAPTALD TATE DIAPTALDSONA   FUCCITENDERS AND THE	ILYDCAYPTUS SPINIFER	LEPTODORA KINDTII	SION CRYSTALLINA ALCORDINATION	CALANDON MAN	CYCLOPOZOA 1774.	CYCLOPS VERNALIS	DIAPTOMUS PALLIDUS	DIAPTONUS REIGHARDI		ERCASILUS SP.	MESOCYCLOPS EDAX	SIZEVERS VOC LIVIDADE	ASPLANCINA HERRICKI				COLLOS CONTRACTOR COLOR	CONDCHILDIDES SP.	CONDCHICUS UNICORNIS	CONTRACTED ROTIFERA	MEXARTIRA MIRA	KERATELLA COCKLEARIS	KERATELLA CRASSA Kebatan a casa saas			◆ドマルスごのド ◆10000011		SYNCHAETA SP.

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	WN=00	E O A	11704	200		; -	176	-	• ~	ı ••	1147	29	,		. 65	110	:	4912	~	1647	567	58	53	52	96	53	52	200	206	59	=	99	1206	3324
	SAM_LOC.AJ	CROUP	CLADOCEBA	CLADOCERA	CLADOCERA	40000 T	CLADOCERA	CLADOCERA	CLADOCERA	COPEPOOA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPERCOA	CCPEPODA	COPEPODA	COPEPODA	COPEPODA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
	RIV_HILE#350,0		5	TRIS															NOS	•	2			,	5									
	YEAR-79		BOSHINA LONGIROSTRIS	CERIODAPHNIA LACUSTRIS	US SP.	A TEX	DIAPHANDSOMA LEUCHTENBERGIANUM	LEPTUDURA KINDTII	SIDA CAYSTALLINA	CALANDIDA IMM.	CYCLUPOIDA 1MM.	CYCLUPS VERNALIS	DIAPTOMUS PALLIDUS	YUS REIGHARD		LUS SP.	MESOCYCLOPS EDAX	_				DRIOS CAUDATU	COLLOTHECA SP.	LOIDES SP.	ILUS UNICORN	TED ROTIFERA	HEXARTHRA MIRA	LA COCHLEARIS	LA CRASSA	KERATELLA EARLINAE	PLATYIAS PATULUS	PLDESDMA HUDSONI	POLYARTHRA SP.	TA SP.
	SEE RIVER	TAXON	NIMSOR	CERIODA	CHYDORUS SP.	DAPHNIA TAM	DIAPHA	LEPTOD	SIDA C	CALAND	これのプラムコ	CYCLUPS	DIAPTO	DIAPTOMUS	ERGASIL	EAGAS 1LUS	MESOCYC	AAUPL I I	TROPOC	ASPLANCHNA	BRACHIDNUS	BRACHIDRUS	COLLOT	HUONOU	K DONOU	CONTRACTED	HEXART	KERATELLA	KERATELLA	KERATEL	PLATYIA	PLOESDY	POLYARI	SYNCHAETA SP
	A ! VER = TENNES																																	
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DOT TASK S 200PLANKTON LISTING SEPTEMBER 24, 1979

			•	TEMBER 648 641	<u>.</u>		
i	RIVERATENNESSEE RIVER	RIVER	YEAR#79	RIV_HILE=350.0	SAM_LOCAD	#X.09	REP.NUM.
		TAXON			GROUP	NC.H	
		BOSHINA	BOSMINA LONGIROSTRIS		CLADOCFRA	6281	
		CERIODAPHNIA	INTA ATA		CLADOCFRA	31	
		CERIODAPHNIA			CLADGCERA		
		CHYDORUS SP.		,	CLADOCERA	63	
	_	DIAPHAND	SOMA LEUCH	DIAPHANDSONA LEUCHTENBERGIANUM	CLADUCERA	156	
		1 LYDCRYP	ILYOCAYPTUS SPINIFER		CLADOCERA		
		LEPTODDA	A KINDTII		CLADOCERA	-	
	••	SIDA CRY	SIDA CRYSTALLINA		CLADGCERA	•	
		CALANGIDA IMM.	A IMM.		COPEPODA	31	
		CYCLOPDI	DA IMM.		COPEPODA	150	
	_	CYCLOPS	VERNAL 1S	•	COPEPODA	-	
	_	DIAPTOMUS PALLID	S PALLIDUS		COPEPODA	· •••	
	<b>J</b>	DIAPTOMUS	S REIGHARDI		COPEPODA		
	-	ERGASILUS SP.	s sp.		COPEPODA	31	
	•	MESOCYCLOPS EDAX	DPS EDAX		COPEPODA	•	
	••	NAUPL 11			COPEPODA	3313	
	-	TROPOCYC	ROPOCYCLOPS PRASINUS		COPEPODA	_	
	7	ASPLANCHNA	A HERRICKI		ROTIFERA	1625	
	-	BRACHIONUS		•	ROTIFERA	31	
	_	BRACHIDNUS	US CAUDATUS		ROTIFERA	ī	
	-	BRACHION	BRACHIONUS QUADRIDENTATUS		ROTIFERA	63	
	_	TINDOKON	COMOCHILOIOES SP.		ROTIFERA	ĩ	
	•	HEXAR THRA			ROTIFERA	31	
	-	KERATELLA	A COCHLEARIS	13	ROTIFERA	202	
		KERATELLA	CRASSA		ROTIFERA	156	
	-	KERATELL	A EARLINAE		ROTIFERA	ę,	
	-	PLATY 145			ROTIFERA	31	
	-	PLOESOMA	HUDSON		ROTIFERA	31	
	_	PLDESOMA	PLDESDMA TRUNCATA		ROTIFERA	63	
	-	POLYARTHRA	A SP.		ROTIFERA	750	
	•	SYNCHAETA			ROTIFERA	2094	

- who was the same

MEP NUMBER SELECTIONS

## DOT TASK 9 200PLANKTON LISTING SEPTEMBER 24, 1979

MY = 09	Z Z	6656	-4		-	307	-4	•	-1	~	480		-	4.1	24		3019	77	1934	169	54	*	42	47	1	76	5	7	<b>5</b> 2	519	3939
SAMLLOCOAJ	GROUP	CLADOCERA	CLADUCERA	CLADICERA	CLADUCERA	CLADUCERA	CLADOCERA	CLADDCERA	CLADOCERA	COPEPODA	COFEPDOA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
RIV_HILE#350.0		15		TRIS		DIAPHANDSOMA LEUCHTENBERGIANUM							•••					NUS		15	BUDAPESTINENSIS	ENTATUS		13		13					
YEAR=79		BOSMINA LONGIROSTRIS	CERIODAPHNIA 1MM.	CERIDDAPHNIA LACUSTRIS	US SP.	NOSOMA LEUCH	LEPTUDORA KINDTII	SIDA CRYSTALLINA	SIMDCEPHALUS IMM.	CALANUIDA IMM.	CYCLOPOIDA IRM.	CYCLOPS VERNALIS	DIAPTUMUS REIGHARDI	LUS INM.		MESOCYCLOPS EDAX	-	TROPOCYCLOPS PRASINUS			ONUS BUDAPES	DAUS QUADRIDENTATUS	CONDCHILDIDES SP.	CONDCHILOS UNICORNIS		LLA COCHLEARIS	LLA CRASSA	MA HUDSON!	MA TRUNCATA	POLYARIARA SP.	ETA SP.
RIVER	TAXON	BOSKIN	CER 100	<b>CER100</b>	CHYDDRUS SP.	DIAPHA	LEPTUD	SIDAC	SIMDCE	CALAND	40 TO A D	CYCLOP	DIAPTO	ERGASILUS	<b>ERGASILUS</b>	4ESOCY	VAUPL 11	TROPOC	ASPLANCHNA	BRACHIONUS	BRACH 10%US	BRACHIONUS	HOCNOS	K D N D C N	HEXAKT	KERATELLA	KERATELLA	PLUESONA	PLDESOMA	POLYAR	SYNCHAETA SP
RIVER-TENNESSEE RIVER																															

# DOT TASK 9 ZOOPLANKTON CALCULATIONS SEPTEMBER 24, 1979

PAR 19	RIVERSTENNESSEE RIVER RIVENIL	IV_MILE#350.0 SA!	SAM_LOCMAD
	TAXON	GROUP	MEAN
	TATA	9	
	S S S S S S	VOOC ER	7285
	NIA IMM.	VOOCER	•
	NIA LAC	VOOCER.	
		VOCC ER	•
	Į	OOCER	
	ETROCURVA	2	:
	4 6	X 1000	
	12 37 17 17 17 17 17 17 17 17 17 17 17 17 17	1000	
	< 3	2000	٠.
	LLINA	CLADOCERA	•
	LUS VE	NOOCER.	•
	NE NE	EPODA	*
	A IMM.	ř	334
	ERNAL 15	ř	-
	PALL IDUS	ě	<b>-</b>
	REICHAR	Ť	-
	ERCASILUS IMM.	ž	ş
	S.	ž	23
	⋖ :	Ē	-
	PS EDA	Ė	
			2184
	OPS PREST		
	A HERRICKI	Ξ	906
	MACHIDINGS ANGULARIN	Ē	
	RACHIGNUS BUDAPESTIN	Ē	•
	RACHIONOS CALTCIFL	=	•
	GRACIA CACO CACONICA	2	97
	ATCHEORY ACTIONS		D 9
	DEFECT STR		•
	ONDCALLUS	Ē	4
	EXARTHRA MIRA	Ξ	
	ERATELLA COCHL	Ξ	
	ERATELLA CRASSA.	Ξ	10
	ERATELLA EARLS	Ξ	
	DESONA HUDSO	Ξ	
	LOESONA TRUNCA	Ξ	ā
	LYARTHRA	•	Ē.
	NCHAETA SP.	0116	1657
	CHOCERCA	OTIFER	86

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## DDT TASK 9 ZOOPLANKTON LISTING SEPTEMBER 24, 1979

			•	SEPTEMBER 24, 1979	6.	
STORESTORESTORES NIVERSHENNESSEE RIVER	RIVERATENNESSEE	AIVER	YEAR=79	RIV_MILE=350,0	SAM_LOC.AD	HN 00
		TAXON			GROUP	X CX
		ALONA COSTATA Bosylya Longi	ALONA COSTATA BOSHINA LONGIROSTRI	<i>S</i>	CLADOCERA	1 224
		ERIODAPH	CERTODAPHNIA THE	•	CLADOCFRA	E1
		ERIODAPH	CERIODAPHNIA LACUSTRIS	TRIS	CLADOCERA	
	•	CHYDORUS SP.	SP.		CLADOCERA	
		DAPHNIA IMM.			CLADUCERA	-
		DAPHNIA	DAPHNIA RETRUCURVA		CLADOCERA	
	<b>.</b>	COAHARIO	DIAPHANDSOMA LEUCH	DIAPTANDSCHA LEUCHTENBERGIANUM	CLADOCERA	8.
						٠.
		PLEUKUAUS MARULA Sida CRYSTALLINA	SIDA CRYSTALLINA	•	CLADOCERA	-4 -
		CALANOTOA IMM.	LMH		COPEDOA	. ,-
		YCLOPOID	A IMM.		COPEPOOA	492
	•	CYCLOPS VERMALIS	FRIAL IS		COPEPODA	-
		DIAPTOMUS	PALLIDUS		COPEPODA	-4
	•	DIAPTOMUS	REIGHARDI	-	COPEPDDA	-
		ERGAS1LUS	MH.		COPEPODA	92
		ERGAS ILUS	. 59.		COPEPOOA	13
		EUCYCLOPS	ACIL IS		COPEPODA	-
	•	MESOCYCLOPS EDAX	JPS EDAX		COPEPOOA	
	~	NAUPL I I			CUPEPODA	1451
		ROPOCYCL	TROPOCYCLOPS PRASINUS	NO.	COPEPODA	92
	-	A SPIL ANG ME		<b>.</b>	KUTIFERA	479
		BRACHIONOS		.15	ROTIFERA	16
				BUDAPEST INENS IS	ROTIFERA	M.
			S CAUDAIUS	2	KOTITERA POTITERA	92
			82 29010			9 :
			CONCENTRATION OF THE PROPERTY	*		7 6
	,	ACT COLUMN ACT	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	<b>:</b>
		450475		9.		7
	. •	KEAATELLA CRASSA	CRASSA	1	ROTIFERA	2.0
		LOESOMA	PLOESOMA TRUNCATA		ROTIFERA	:=
		POLYARTHRA SP.	A SP.		ROTIFERA	137
	•	SYNCHAETA SP	SP.		ROTIFERA	725
		TRICHOCERCA SP	ICA SP.		ROTIFERA	70

# DOT TASK S ZOOPLANKTON LISTING SEPTEMBER 24, 1979

The state of the s

REP_NUMB2 firestones		•																																	
2N-09	NCH	8788		-4	67	115	-	-4		36	423			-	19	1.9	_	2538	36	654	173	38	19	28	61	36	<b>.</b>	288	154	38	<b>8</b>	19	769	2058	2
SAMLLOCALD	GROUP	CLADOCERA	CLADOCERA	CLADCCERA	CLADOCERA	CLADOCERA	CLADOCERA	CLADUCERA	CL ADGCERA .	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPODA	COPEPOOA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA	ROTIFERA
TENNESSEE RIVER YEAR=79 RIV;MILE=350.0	TAXON	BOSHINA LONGIROSTRIS		CERIDDAPHNIA LACUSTRIS	CHYDORUS SP.	DIAPHANDSOMA LEUCHTENBERGIANUM	1LYOCAYPTUS SPINIFER	SIDA CAYSTALLINA	SIMDCEPHALUS VETULUS		•		So		ERGASILUS 1979		MESOCYCLOPS EDAX	NAUPL 1 1	TRUPUCYCLOPS PRASINUS		Ū	BRACKIDGUS BUDAPESTINENSIS	_	BRACHIONUS CAUDATUS		•		KERATELLA COCHLEARIS	KERATELLA CRASSA	AERATELLA EARLINAE	PLDESOMA HUDSON!	PLDESOMA TRUNCATA	POLYARTHRA SP.	SYNCHAETA SP.	TRICHDCERCA SP.

CANONIA MARKANIA A

REP\_NUMES STREET

# DOT TASK 5 ZOOPLANKTON LISTING SEPTEMBER 24, 1979

Prince   RIVERATENNESSEE RIVER
TAXDN
BOSHINA LONGIROSTRIS
CERIODAPHNIA LACUSTRIS
DIAPHANDSCHA LEUCHTENBERGIANUM
LEPTODORA KINDTII
SIDA CRYSTALLINA
CALANDIDA INM.
CYCLUPOIDA IMM.
CYCLOPS VERNALIS
DIAPTONUS REIGHARDI
ERGASILUS IMM.
ERGASILUS SP.
MESOCYCLOPS EDAX
Z
TROPOCYCLOPS PRASINUS
ASPLANCHNA HERRICKI
BRACHIONUS
BRACHIONUS
BRACHIDIUS
COLLOTHECA SP.
CONDUMINATION SP.
CONDCHILUS UNICORNIS
HEXARTHRA HIRA
KERATELLA COCHLEARIS
KERATELLA CRASSA
PLDESOMA HUDSONI
POLYARTHRA SP.
SYNCHAETA SP
TRICHOCERCA SP

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Table 5-9

#### OCCURRENCE AND ABUNDANCE OF BENTHIC MACROINVERTEBRATE FAUNA COLLECTED BY GRAB SAMPLING DURING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/METER<sup>2</sup>)

		TRM	a	•	TRM							
		350.	0		45.3	HS <b>BM</b> <sup>b</sup>	<b>HSBM</b>	HSBM	<b>HSBM</b>	bfcm <sup>c</sup>	$ICM^d$	erm <sup>e</sup>
Taxa	Lf	Mg	<u>R</u> h	Ī	R	5.9	5.37	2.4	1.3	1.2	0.0	20.7
Diptera												
Ceratopogonidae	_	-	-	-	-	-	20	16	12	42	_	4
Culicoides sp.	-	-	_	-	-	-	-	-	-	_	2	-
Chaoboridae												
Chaoborus sp.	66	34	40	8	2	2	-	-	2	-	-	2
Chironomidae												
Ablabesmyia sp.	28	8	2	6	2	-	-	2	6	2	6	81
Chironomus sp.	2	2	-	-	-	8	248	22	201	2	-	4
Coelotanypus sp.	111	93	121	6	-	-	-	_	6	60	8	8
Cryptochironomus sp.	-	8	2	12	10	8	2	46	4	6	46	-
Dicrotendipes sp.	_	-	-	4	-	2	2	4	4	-	6	-
Fpoicocladius sp.	10	-	-	-	-	-	-	-	-	-	-	8
Orthocladiinae	-	-	-	-	-	-		4	-	-	-	-
Parachironomus sp.	-	-	_	2	-	-	-	24	6	-	-	-
Paratendipes sp.	-	-	-	-	-	-	-	4	-	-	-	2
Polypedilum sp.	- 6	26	-,	14	-	-	202	•	8	-		2
Procladius sp.	0	3 <del>6</del>	4	4	-	24	203	268	733	105	127	4
Stenochironomus sp.	_	_	-	30	_	-	-	-	-	-	2	4
Stictochironomus sp.	_	_	-	30	2	-	-	 97	102	226	-	4
Tanypus sp. Tribelos sp.	_	_	_	_	-	-	-		183	236	16	40
Xenochironomus sp.	_	48	_		276	_	_	-	2	_	_	40
Aettochtronomas sp.		40	_	01	270	_	_	_	4	_	_	_
Gastropoda												
Physidae												
Physa sp.	-	-	-	_	-	4	-	-	-	-	-	-
Bithyniidae		-	٠.									
Somatogyrus sp. Viviparidae	4	22	24	-	-	-	-	-	-	-	-	-
Campeloma sp.	-	-	-	4	8	-	-	-	-	-	-	-
Lioylax sp.	-	-	-	-	-	-	-	-	-	-	2	-
Mollusca												
Cyrenidae												
Corbicula sp.	68	16	95	54	34	-	-	-	-	-	8	6
Sphaeriidae	_											
Sphaerium sp.	6	44	18	-	6	-	2	6	2	10	2	2
Unionidae					_							
Leptodea sp.	-	~	-	-	2	-	_	-	-	. <del>-</del>	-	2
Proptera sp.	-	2	-	-	-	-	-	-	-	-	-	~

g in the language to be

Table 5-9

## OCCURRENCE AND ABUNDANCE OF BENTHIC MACROINVERTEBRATE FAUNA COLLECTED BY GRAB SAMPLING DURING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/METER<sup>2</sup>) (continued)

		TRN 350.	.0		RM 5.3	нѕвм <sup>в</sup>	HSBM	HSBM	HSBM	BFCM <sup>C</sup>	ICM <sup>d</sup>	erm <sup>e</sup>
Taxa	<u>L</u> f	$\underline{\mathbf{M}}^{\mathbf{g}}$	$R^h$	<u>L</u>	<u>R</u>	5.9	5.37	2.4	1.3	1.2	0.0	20.7
Caenidae												
<u>Caenis</u> sp.	-	-	-	-	-	-	-	-	-	-	2	-
Hexagenia sp.	278	<b>6</b> 0	24	4	-	-	-	-	-	2	16	522
Trichoptera Hydropsychidae												
Cheumatopsyche sp. Psychomyiidae	-		-	-	6	-	-	-	-	-	-	-
Cyrnellus sp.		-	-	2	6	-	-	-	-	-	-	-
% nata €orduliidae												
Neurocordulia sp.	-	-	-	-	-	-	4	-	-	-	-	-
Dromogomphus sp. Gomphus sp.	_	-	-	-	2	-	-	-	- 4	-	-	-
t.bellulidae							•		7		_	_
Perithemis sp.	-	-	-	-	-	-	2	-	-	-	••	÷
Didymops sp.	-	-	-	-	-	-	-	-	-	-	2	-
algochaeta Tubificidae	52	30	163	20	2	612	2075	119	153	<b>.</b> 81	129	32
Branchiura sp.	8	16	6	2	-	20	44	38	2	87	2	199
Hirudinea	•	•										
Glossiphoniidae	2	2	12	-		-	-	-	-	-	42	-
Nemata	-	2	-	-	~	-	-	2	2	-	-	-
Lyoza Dophopodidae <u>Pectinatella</u> sp.	_	_	8	_	_	_	_	_	14	-	4	_
Isopoda			-						<u>.</u> ,		- <b>-</b>	
Asellidae Asellus sp.	-	-	_	-	-	2	6	_	_	-	_	_

#### Table 5-9

### OCCURRENCE AND ABUNDANCE OF BENTHIC MACROINVERTEBRATE FAUNA COLLECTED BY GRAB SAMPLING DURING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/METER<sup>2</sup>) (continued)

 $TRM^{a}$ TRM  $ICM^d$ HSBM<sup>b</sup> BFCM<sup>C</sup> ERMe HS BM **HSBM** HSBM 350.0 345.3 5.37 2.4 1.3 1.2 0.0 20.7 R Megaloptera Sialidae Sialis sp. Coleoptera Elmidae Dubiraphia sp. Macronychus sp.

4 Mar. 1

a. Tennessee River Mile.

b. Huntsville Spring Branch Mile.

c. Barren Fork Creek Mile.

d. Indian Creek Mile.

e. Elk River Mile.

f. Sample collected from left overbank.

g. Sample collected from midchannel.

h. Sample collected from right overbank.

i. Taxa not found.

Table 5-10

#### MACROINVERTEBRATE TAXA OCCURRENCE AND ABUNDANCE AS DOCUMENTED FROM HESTER-DENDY TRAP SAMPLERS DURING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/METER<sup>2</sup>)

Taxa	TRM <sup>a</sup> 350.0	TRM 345.2	HSBM <sup>b</sup> 5.9	HSBM 5.37	HSBM 2.4	HSBM 1.3	BFCM <sup>C</sup> 1.2	ICM <sup>d</sup> 0.0
Diptera								
Empididae	_e	23	-	-	-	-	-	-
Ceratopogonidae	-	-	-	-	-	-	8	-
Chironomidae								
Ablabesmyia sp.	-	-	31	15	23	23	38	-
Chironomus sp.	-	-	608	15	-	-	-	-
Cricotopus sp.	131	85		<b>-</b>				
Dicrotendipes sp.	8	-	723	854	1238	2315	2862	315
Glyptotendipes sp.	_	-	777	1346	1169	2354	5569	2285
Polypedilum sp.	-	8	-	-	-	-	-	-
Mollusca								
Corbicula sp.	-	-	-	-	-	-	8	-
Ephemeroptera Caenidae								
Caenis sp.	-	-	_	_	_	_	23	_
Heptageniidae								
Stenacron sp.	8	-	-	-	-	-	-	-
Tricorythidae								
Tricorythodes sp.	-	62	-	-	-	-	-	-
Trichoptera								
Hydropsychidae	2222	6015						
Cheumatopsyche sp.	3323 38	6915 9185	-	_	-	_	-	-
Hydropsyche sp. Psychomyiidae	36	9100	_	_	-	_	-	_
Crynellus sp.	23	23	_	_		_	108	
Neureclipsis sp.	8	23	_	_		_	100	-
neutectipsis sp.	0	_	_	_	_	-	-	-
Odonata								
Coenagrionidae								
Argia sp.	-	-	-	-	-	-	-	15
Oligochaetae								
Tubificidae	-	_	23	-	-	15	_	_
Naidida <b>e</b>	-	8	-	-	-	-	-	-
Nemata	8	-	-	-	-	-	8	31
Tricladida								
Planariidae								
Dugesia sp.	31	-	-	-	-	-	-	-

The following the second

#### Table 5-10

## MACROINVERTEBRATE TAXA OCCURRENCE AND ABUNDANCE AS DOCUMENTED FROM HESTER-DENDY TRAP SAMPLERS DURING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/METER<sup>2</sup>) (continued)

Taxa	TRM <sup>a</sup> 350.0	TRM 345.2	HSBM <sup>b</sup> 5.9	HSBM 5.37	HSBM 2.4	HSBM 1.3	BFCM <sup>C</sup> 1.2	ICM <sup>d</sup> 0.0
Amphipoda Talitridae <u>Ryalella</u> sp.	38	-	_	-	-	-	-	-

a. Tennessee River Mile.

b. Huntsville Spring Branch Mile.

c. Barren Fork Creek Mile.

d. Indian Creek Mile.

e. Taxa not found.

Table. 5-11

#### RESULTS OF MICROSCOPICAL ANALYSIS OF ZOOPLANKTON SAMPLES ANALYZED FOR PERCENTAGE COMPOSITION BY ZOOPLANKTON, OTHER ORGANIC MATTER, AND INORGANIC MATTER DURING LATE FALL/EARLY WINTER

					Mean	n Percentage	e
			Replicate	Number of		Other	
River	Mile	<u>Date</u>	Number	Subsamples	Zooplankton	Organics	Inorganic
HSBM	5.9	12-16-79	10	10	0.9	96.3	2.8
			2C	10	0.6	98.0	1.4
			3C	10	0.4	98.5	1.2
нѕвм	2.4	12-15-79	10	10	2.4	88.5	9.1
			2C	10	4.9	88.1	7.0
			3C	10	3.0	90.7	6.3
ICM	4.6	12-15-79	1C	10	1.6	90.0	8.4
			2C	10	0.6	94.7	4.7
			3C	10	1.3	96.7	2.0
ICM	0.8	12-16-79	1C	10	5.7	92.7	1.7
20	•••		2C	10	21.0	78.3	0.6
			3C*	10	34.6	64.2	1.2
			3C**	10	36.2	63.1	0.7
			3C***	10	25.5	74.5	0.0

<sup>\*\*</sup> Sample was diluted to 40 mL, whole sample counted.

\*\* Sample was diluted to 80 mL, 40 mL counted.

\*\* Sample was diluted to 120 mL, 40 mL counted.

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Table 5-7A

OCCURRENCE AND ABUNDANCE OF PHYTOPLANKTON TAXA IN SAMPLES COLLECTED DURING LATE SUMMER/PARLY FALL (AVERAGE NUMBER/LITER)

		TRM 350.0ª			TRM 345.2			TRM 315.0	
	q <sub>1</sub>	y.	P <sub>M</sub>	1	Σ	<b>«</b>	T	×	~
CHRYSOPHYTA									
Achnanthes sp.	11,422,	3,115	25,958	12,460	10,383	8,307	3,115	3,115	3,115
Asterionella sp.	=,	•	•	4,153		•	•	•	•
Attheya sp.	,	1,038	•	ı	•	•		•	•
Chaetoceros sp.	6,230	•	8,307	6,230	3,115	1	•	•	•
Charactopsis sp.	•	•	1	ŀ	,	•	•	•	•
Cocconeis sp.	1,038	1,038	3,115	ı	1	ı	1	1	•
Cyclotella sp.	•	•	•	•	•	1,038	•	•	•
Cymbella sp.	1	,	,	•		1,038	•	1,038	•
Diatoma sp.	,	,	,	•		•	•		•
Dichotomococcus sp.		,	1	7,268	1		6,230	•	•
Dinobryon sp.	3,115	2,077	1,038	1		•		1	4,153
Fragilaria sp.	•	,	1,038	•	•	•	•	•	•
Comphonena sp.	3,115	,	1,038	•	•	•	1	•	•
Gyrosigna sp.	•	,	•	•	•	•	•	•	•
Melosira sp.	575,237	414,295	463,097	788,095	609,502	210,782	427,793	372,762	586,658
Maylcula sp.	•	3,115	1,038	1	2,077	1,038	•	•	1,038
Mttzchia sp.	•	,	1,038	1,038	•	1,038	1,038	1,038	•
Whizosolenia sp.	5, 192	2,077	3,115	•	2,077	•	•	1	1,038
Rhoicosphenia sp.	1,038	,	•	•	•	1	•	•	
Stauroneis sp.	•	,	1	1	1	1,038	•	1	
Stephanodiscus sp.	50,878	29,073	45,687	35,303	32,188	17,652	24,920	13,498	17,652
Surirella sp.	•		•	•	•	•	•	•	
Synedra sp.	42,572	16,613	40,495	25,958	103,833	26,997	21,805	22,843	22,843
Synura sp.	1		•	1	1	ı	•	•	•
Unidentified Distor	1	•	•	•	•	•		•	•

न्त्राच्यसम्बद्धाः ५

Table 5-7A (continued)

	INT : 69.9		(					4	•	
1	X	æ	HS5.9	HS5, 37	HS2.4	HS1.3	HS0.0	BF1.21	IC4.08	100.0
* 4,153	1,038	1,038	4,153	5,192	17,652	12,456	4,153	28,035	65,394	137,016
2,017	•	1	,	7,268	1	•	•	•	•	1
•	•	•	•	•	•	,	1	•	3,114	•
36,342	1	4,153	•	1	•	1	12,460	8,307	•	1
•	1	1,038	14,537	6,230	19,728	217,980	4,153	789.57	189,954	180,612
3,115	1,038	2,077		1,038	1,038	3,114	1			
•	•		,	•	•	•	1	,	3,114	•
•	•	•	2,077	1^,383	7,268	12,456	•	4,153	,	3,114
•	•	•	•	•	•	•	•	,	•	3,114
•	,	,	,	•	t	ì	ı	28,035	15,570	12,456
•	10,383	3,115	*	•	1	1	•	4,153		
•		•	•	10,383	13,498	•	•	,	•	3,114
•	•	•	,	1,038	2,077	•	•	,	•	•
•	•	,	•	•	1,038	1	1,038	2,077	•	•
2,448,390	707,105	912,695	7,268	890,890	1,271,958	28,387,224	548,240	5,315,228	32,862,042	16,080,696
1,038	329,152	3,115	61,262	35,303	63,338	180,612	15,575	124,600	112,104	74,736
•	•	•	12,460	11,422	3,115	•	1	•	3,114	3,114
•	2,077	1				•	•	,		
•	•	•	•	•	1,038	•	•	•	1	3,114
•	•	•	,	•	1	•	1	•	1	•
103,833	18,690	22,843	,	2,077	509,822	1,367,046	11,422	255,430	865,692	1,036,962
•	•	•	,	,	•	•	•	3,115	•	3,114
62,300	16,613	25,958	25,958	565,05	126,677	843,894	36,342	275,158	473,328	345,654
•	•	•	•		•	•	•	1	•	•
•	•	•	•	1	Ì	3,114	r	•	•	•

portion was the control of

\*Taxa listing identical to preceding page sequence

Table 5-7A

OCCURRENCE AND	ANCE OF PHYTOPLANKION TAKA IN SAMPLES COLLECTED URING LATE SUMMER/EARLY FALL (AVERAGE NUMBER/LITER) (continued)
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		THOM 350 08			7.87 Mar			TEM 315.0	
	مام	H <sub>C</sub>	₽ <sub>Q</sub>	1	Σ	<b>∠</b>	1	×	<b>a</b>
CHLOROPHY TA									
Acanthosphaera sp.	•		,	•	•	•	•	1	1
Actinastrum sp.	14,537	29,073	18,690	16,613	16,613	8,307	4,153		4,153
Ankistrodesmus sp.	7,268	2,077	1	4,153	1,038	•	6,230	4,153	4,153
Botryococcus sp.	•	•	•	•	1	•	•	•	•
Bracteacoccus sp.	•	3,115	•	•	•	•	1	•	•
Carteria sp.	•	•	•	•			•	•	•
Chlamydomonas sp.	88,258	74,760	77,875	38,418	28,035	21,805	26,997	22,843	23,882
Chlorella sp.	19,728	15,575	7,268	14,537	18,690	12,460	14,537	22,843	26,997
Chlorococom sp.	•	•	•	1	•	1	•	•	1
Chlorogonium sp.	1,038	•	•	•	1	•	•	•	•
Chodatella sp.	4,153	5,192	4,153	8,307	2,077	ı	5,192	4,153	1,038
Closteridium sp.	•	•	1,038	•	ı	•	•	•	•
Closteriopsis sp.	•	1,038	1	•	•	•	2,077	•	•
Closterium sp.	•	•	•	•	•	•	•	•	•
Coelastrum sp.	12,460	8,307	•	16,613	•	•	1	•	•
Cosmarfum sp.	1,038	2,077	1,038	•	1,038	•	1	ı	1
Crucigenia sp.	29,073	47,763	8,307	4,153	8,307	8,307	ı	24,920	24,920
Dactylococcus sp.	•	•	•	•	•	•	•	•	• ;
Dictyosphaerium sp.	86,182	29,073	109,025	41,533	19,728	62,300	4,153	23,882	21,805
Elakatothrix sp.	•	•	•	•	•	•	•	•	1
Eudorina sp.	t	9,345	•	ı	•	•	•	•	ı
Franceia sp.	1,038	2,077	1,038	2,077	2,077	2,077	•	1	•
Gloeosctinium sp.	•	24,920		1	•	•	•	•	•
Colenkinia sp.	20,767	18,690	16,613	15,575	9,345	2,077	7,268	4,153	2,077
Continue and	•	•	,	15 575	•	•	,	•	•

B. E. 收拾13年的1911年

Table 5-7A (continued)

	2 <sup>f</sup> IC4.0 <sup>g</sup> IC0.0		5/1 826	221 166	1 ( )	031-18 005-251 880.		865.692	806,526	,	12.456	186.840		6.228	3.114	59.166	1	386.136		24.912	15.570	24.912		18.684	43,596	
	HSO.0 BF1.2 <sup>f</sup>					3,115 1,038																				
	HS1.3	•	\$66.748	330,034	•	28,026		8,706,744	1,202,004	•	15,570	211,752	•	28.026	12,456	49.824	6,228	653,940	1	87,192		373,680	1	49,824	93,420	27, 013
	H\$2.4	•	56.070	47.763	•	•	•	386,260	124,600	•	15,575	60,223	2,077	8,307		•	1,038	078,67	•	13,498	•	4,153	•	7,268	15,575	•
	HS5.37					1																				
	HS5.9	•	•	8,307	t	•	•	86,182	•	•	•	•	•	1,038	1,038	•	2,077	4,153	•	14,537	•	•	1	•	1,038	4,153
	œ	2,077	8,307	4,153	•	4,153	,	37,380	30,112	•	5,192	1,038	•	,	,	•	•	4,153	•	•	2,077	•	•	•	7,268	1
TRM 289.9	<b>3</b> 5					15,575																				
	اد	•	97,488	11,422	•	19,728	•	106,948	315,653	• •	3,115	2,077	•	4,153	•	1	•	16,613	•	82,028	8,307	•	• ;	4,153	25,958	•

\*Taxa listing identical to preceding page sequence

Table 5-7A

OCCURRENCE AND ABUNDANCE OF PHYTOPLANKTON TAXA IN SAMPLES COLLECTED
DURING LATE SUPPER/EARLY FALL
(AVERAGE WINDER/LITER)
(continued)

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		TRM 350.0ª			TRM 345.2			TRM 315.0	
, ,	qT	Ų,	R <sup>d</sup>	1	×	~	1	*	<b>*</b>
CHLOROPHTTA (cont.)									
Ryalotheca sp.	33,227	20,767	28,035	1	5,192	8,307	4,153	9,345	•
Kirchneriella sp.	65,415	50,878	31,150	14,537	1	•	8,307		12,460
Meractinium sp.	18,690	2,077		11,422	16,613	1	2,077	8,307	
Micrasterias sp.	•	•	•	1	•	•	•	•	•
Occystis sp.	19,728	9,345	3,115	8,307	4,153	4,153	,	•	2,077
Pandorina sp.	•	16,613	•		•		,	•	•
Pediastrum sp.	3,115	8,307	•	8,307	048,640	•	31,150	23,882	1,038
Planktosphaeria sp.	•	•	29,073	1		8,307	,		,
Polyedriopsis sp.	1	•	ı		,	1.038	1.038	•	,
Protococcus ap.	104,872	91,373	97,603	186,900	4,153	28,035	28,035	1	ı
Pteromonas sp.	3,115	1,038	1,038		. 1	1,038	1,038	1,038	,
Pyramimonas sp.	•	•	•	•	•		•	•	•
Quadrigula sp.	•	6,230	1,038	•	•	1	,	•	ı
Roya sp.	•	•	•	•	•	•	•	•	1
Scenedesmus sp.	140,175	116,293	43,610	79,952	50,878	22,843	41,533	64,377	83,067
Schroederla sp.	2,077	1,038	2,077	1,038	•	2,077	1,038		3,115
Selenastrum sp.	2,077	1,038	3,115	6,230	4,153		4,153	•	9,345
Staurastrum sp.	3,115	•	2,077	•	•	•		ı	•
Tetraedron sp.	5,192	5,192	2,077	3,115	1	•	3,115	1,038	1,038
Tetrastrum sp.	4,153	•	4,153	•	•	,	4,153	•	4,153
Treubaria sp.	1,038	1,038	1,038	2,077	4,153	•	•	•	7,268
Trochiscia sp.	2,077	1,038	3,115		1,038	•	1	•	2,077
Unidentified Green Colony	80,990	•	,	ı			•	62,300	24,920
Unidentified (Treubaria?)	•	1,038	2,077	•	2.077	•	•		1,038

Table 5-7A (continued)

	TRM 289.9		4				•	<b>1</b>	o e	,
1	Σ.	æ	HS5.9		HS2.4	HS1.3	HS0.0	811.2	104.05	100.0
* 12.460		•	1	•	•	6,228	•	1,038	•	1
71,645		4,153	4,153		56,070	879,66	11,422	120,447	73,596	292,716
34,265		•			22,843	37,368	2,077	19,728	152,586	242,892
1,038		•	•		•	•	•	•	•	•
5,192		4,153	•		3,115	124,560	1	8,307	34,254	•
		33,227	1		•	879,66	•	•	1	1
•		18,690	•		•		8,307	63,338	146,358	102,762
1			•		•	,	•	•	78,67	ı
•		1	•		1	,	,	•	•	•
99.680		•	8,307		55,032	597,888	43,610	148,482	280,260	211,752
2.077		1.038			1,038		•	3,115	3,114	9,342
1,038		1,038	•		1,038	9,342	1,038	6,230	18,684	34,254
'			•				•	11,422	•	•
•		•	•		•	•	3,114	•	6,228	3,114
187.938		53,993	43.610		371.723	2,391,552	103,833	936,577	2,260,764	1,488,492
11.422		1.038			7,268	46,710	6,230	20,767	161,928	137,016
19,728		7,268	6,230		72,683	738,018	1,038	161,980	292,716	354,996
•		•			•	•	•	•	•	•
•		1,038	•		22,843	124,560	4,153	59,185	121,446	115,218
•		•	•		20,767	879,66	•	74,760	292,716	68,508
1.038		1	•	1	2,077	3,114	,	12,460	18,684	9,342
1,038	1,038	4,153	•	•	1,038	•	12,460	268,928	15,570	65,394
•		٠	•	•	•	1	•	•	•	•
1,038		•	ı	1,038	•	3,114	1,038	6,230	,	3,114

\*Taxa listing identical to preceding page sequence

Table 5-7A

OCCURRENCE AND ABUNDANCE OF PHITOPLANTON TAIA IN SAMPLES COLLECTED DURING LATE SUMMER/EARLY FALL (AVERACE NUMER/LITER)	
--	--

		TRM 350.0	1		TRM 345.2			TRM 315.0	
	P <sub>1</sub>	يو	Ped	1-1	×	<b>«</b>	1	×	~
CRYPTOPHYTA CTYPEOMOGAS &P.	1,038	4,153	ı	ı	ı	ı	2,077	ı	ı
CYANOPHYTA Anabaena sp.	119,408	57,108	142,252	117,332	28,035	48,802	41,533	10,383	8,307
Anacystis sp. Aphanocapsa sp.	2,271,873	901,273	1,407,980	681,147	646,881	194,168	242,970	186,900	97,603
Aphanothece sp. Chrococcus sp. Decriooccosts	\$1,917 33,227	53,993 18,690	25,958 8,307	9,345	6,230 12,460	33,227 3,115	10,383	6,230	8,307 6,230
Glosothèce sp. Lymbya sp. Marismopedia sp.	3,115 614,693	2,077	1,038	2,077	1,038	294,887	74,760	1,038	103,833
Oscillatoria sp. Decillatoria (spiral)	1,038		C/C*C7	78.47	) CC ***	1 1	1 1	1,038	1,038
Spirulina sp.		1 1	1 1	1 1	1 1	• •	1 1	• 1	• •
EUGLEMOPHTA  Crytcollens sp.  Busiens sp.  Phacus sp.  Tracielosens sp.	4,153 3,115 -	1,038	3,115 2,077	1,038	1,038 13,498 - 1,038	1,038	1,038 4,153	3,115 1,038	4,153 1,038

Table 5-7A (continued)

ICO.	1:0,130	74,736	734,904	1	379,908	•	663,282	12,456	•	27,428,112	115,218	52,938	•	27,912	•	9,342	202,410	9,342	24,912
104.04	233,550	96,534	984,024	•	•	•	937,314	•	6,228	51,558,498	71,622	15,570	1	6,228	1	37,368	59,166	9,342	•
BF1.2 <sup>f</sup>	078*67	2,077	516,052	1	•	•	200,398	•	1	6,443,897	20,997	12,460	•	•	2,077	14,537	181,708	6,230	42,572
HSO.0	12,460	271,005	207,667	•	•	4,153	8,307	1	1,038	739,293	7,268	1,038	•	•	•	6,230	30,112	•	1
HS1.3	80,964	1 1	1,173,978	124,560	•	•	1,189,548	•	ı	57,512,466	274,032	6,228	6,228	9,342	ı	37,368	2,226,510	31,140	59,166
HS2.4	3,115	1 1	438,177	•	•	2,077	129,792	•	1,038	3,561,483	40,495	14,537	4,153	5,192	ı	2,077	97,603	4,153	4,153
HS5.37	1,038		130,830	•	•	19,728	15,575	•	1	519,166	43,610	7,268	1,038	2,077	t.	•	24,920	1,038	2,077
HS5.9e	1	1 1	137,060	•		•	34,265	1	15,575	633,383	118,370	5,192	1	1,038	1	ı	21,805	1,038	1,038
~	7,268	12,460	129,792	1	1	12,460	7,268	•	•	182,747	5,192	,	1	•	F	1,038	2,077	1	ı
TRM 289.9	4,153	17,652	69,568	•	•	•	14,537	•	•	225,318	3,115	•	•	•	1	1,038	ı	•	•
1	* 2,077	1 1	615,732	•	•	8, 307	63, 338	•	•	3,171,070	13,498	2,077	•	•	•	2,077	11,422		1

46. M. Co. C.

\*Taxa listing identical to preceding page sequence

Table 5-7A

OCCURRENCE AND ABUNDANCE OF PHYTOPLANKTON TAXA IN SAMPLES COLLECTED

DURING LATE SUMMER/EARLY FALL

(AVERAGE NUMBER/LITER)

(continued)

	æ		
TRM 315.0	<b>3</b> :	1	1
	7	ı	•
	<b>«</b>	•	•
TRM 345.2	Σ.	2,077	1,038
	ב	•	1
	Rd	•	•
TRM 35 . 9ª	ų,	•	١
	q <sub>1</sub>	ı	•

Glenodinium sp. Gymnodinium sp.

PYRROPHYTA

Tennessee River Mile.
Left Overbank.
Midchannel.
Right Overbank.
Huntsville Spring Branch Mile.
Barren Fork Creek Mile.
Indian Creek Mile.

Table 5-7A (continued)

100.0	, 1
IC4.0*	1 +
BF1.2 <sup>£</sup>	6,230
HS0.0	1 1
HS1.3	1 (
HS2.4	2,077
HS5.37	1 1
HS 5. 9 t	1,038
9	2,077
TRM 289.9	1 1
-1	i i

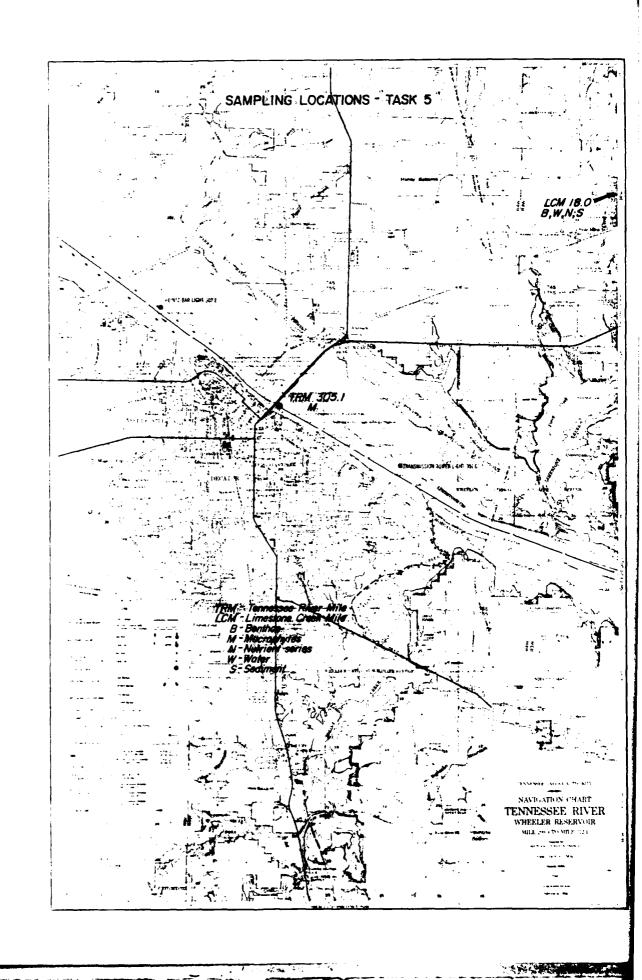
\*Taxa listing identical to preceding page sequence

Appendix

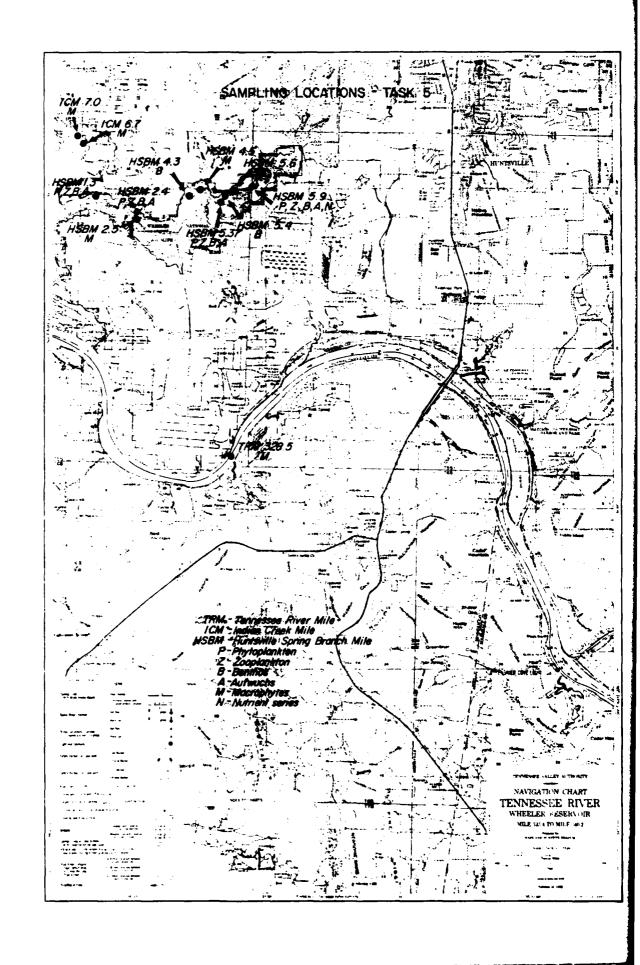
Task 5

Maps of Sampling Sites

at mails at



SAMPLING LOCATIONS - TASK TRM—Teansesse River Mile
BFCM - Barren Fork Creek Mile
ICM - Indian Creek Mile
P - Phytoplankton
Z-Zooplankton
B - Beathos
A - Aufwuchs
M - Macrophytes
N - Nutrient series NAVIGATION CHART TENNESSEE RIVER
WHEELER RESERVOIR
MALE TO MILE TO A

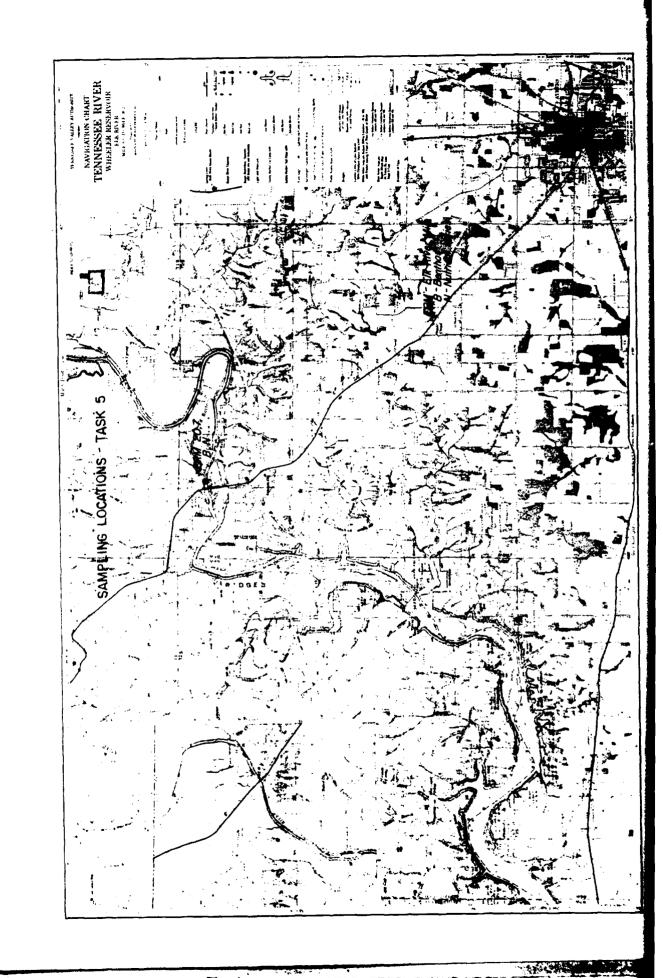


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FRM 22.7 SAMPLING LOCATIONS - TASK 5 NAVIGATION CHART TENNESSEE RIVER WHEELER RESERVOIR SAMPLING LOCATIONS TASK NAVIGATION CHART TENNESSEE RIVER GUNTERSVILLE LAKE

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1 602



ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION OF HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS, WHEELER RESERVOIR, ALABAMA

#### TASK 6

VOLUME I. HYDROLOGIC AND SEDIMENT DATA

Tennessee Valley Authority Office of Natural Resources

August 1980

### PREFACE

This document was prepared in support of the Envineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

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#### Task 6

### Hydrologic and Sediment Data

#### Triana DDT Study

#### 1.0 Purpose and Scope

### 1.1 Purpose

The purpose of this portion of the study was to determine the amount of sediment and DDTR (DDT isomers and metabolites) transported during various flows to allow the estimation of seasonal and yearly amounts of these materials transported along Huntsville Spring Branch-Indian Creek (HSB-IC); and to investigate the physical processes by which the DDTR is transported.

#### 1.2 Scope

Huntsville Spring Branch and Indian Creek were sampled at four sites. Two upstream sites served to bracket the region which was expected to contain the highest DDTR concentrations and provided values of the study parameters that enter and exit this area along HSB. The third site provided values on IC downstream from the mouth of HSB and the fourth site served to provide data for an estimate of the amount of sediment and DDTR that exits the basin.

During or immediately following several rainfall events, water samples to be analyzed for DDTR were collected near the mouths of all drainage ditches from the landfill area, between the two uppermost sampling sites on HSB.

At the sampling sites, water samples were taken concurrently with streamflow measurements for events 3 through 7. Miscellaneous discharge measurements were made during the first two events. Wheeler

Reservoir elevations fluctuate on an annual cycle between a maximum level of 556 in the early summer, and a minimum level of 550 in the winter. Tests were conducted over an eight month period and over a representative range of Wheeler Reservoir elevations. Samples were also collected on HSB at bridge crossings on Patton Road and Dodd Road (see Table 6-1) during special reservoir operations to investigate the transport of DDTR and sediment when the reservoir was falling.

Continuous stage recorders were installed to provide hydrologic data for backwater computations. Backwater computations were made by use of a computer model to determine continuous storm hydrographs at each of the stations and the relationship between stage changes and flows along HSB and IC. The stage records and slope-related stage-discharge ratings were used as a basis for estimating the duration of flows along HSB and IC. A continuous recording raingage was installed at Patton Road (HSBM 5.9).

The flood discharges for the 10-year, 50-year, 100-year and 500-year floods were computed and the flood limits were defined. Also, discharges for the largest flood that occurred since the DDT plant operations began were computed and the flood limits delineated. Maps showing flooded areas for each of these events were prepared.

For each sample taken in a data set, the suspended sediment concentrations and DDTR concentrations were determined and the loads of each computed. The loads were related to the streamflow to form suspended sediment, DDTR, and DDTR isomer rating curves. Streamflow durations were also estimated at the sampling sites for summer and winter conditions. The rating curves were then related to the streamflow duration to give an estimate of seasonal and yearly quantity of total suspended sediment and maximum total DDTR passing each sampling station.

## 2.0 Instrumentation Locations

Seven stage recorders were installed to continously record stream/reservoir elevations. All of the stream stage gages were FW-2 recorders with weekly charts. A recording raingage was installed about 50 feet from the right waters edge and about 20 feet downstream from the bridge over HSB at Patton Road. Rainfall was abstracted in hourly amounts. All gages were serviced weekly. Table 6-1 summarizes information about each of these gages. Figure 6-1 is a map of the study area and shows the location of each of the gages.

The stage recorder at HSB at Martin Road was initially installed to provide an upstream control with a stable stage-discharge relationship. However, after measurements indicated that a stable rating existed at HSB at Patton Road, the Patton Road station was used as the upstream control.

The water quality sampling was not conducted at the stage recorder site on ICM 0.0. Rather the water quality samples and streamflow measurements were taken at ICM 0.9 where a cable could be stretched across the channel to anchor a boat during the measurements and provide reference verticals.

Figures 6-2 through 6-7 give the available channel crosssection information at each of the gaging stations. The cross-section at ICM 1.0 was included because it is near the downstream sampling station (ICM 0.9). No cross-section was available for ICM 8.2.

Table 6-1

		General Description	Located on right bank of IC at mouth of creek	Located on downstream side of Centerline Rd. bridge, 30 ft. from right abutment	Attached to downstream side of Martin Rd. bridge 6 ft. right of rock pier	Attached on the downstream side of the Dodd Rd, bridge in the stream center	Gage located on right bank; well attached to 12 ft. walkway extending into creek	Attached to downstream side of Patton Rd. bridge 30 ft. from left bank	Gage is 20 ft. downstream from Patton Rd. bridge and 50 ft. from right water's edge	Attached to downstream side of Martin Rd. bridge, 120 ft. from left abutment
		Access	Wall-Triana Highway at Triana Landing	Via Centerline Rd.	Via Martin Rd.	Via Dodd Rd.	Patton Rd. to Mill Rd. to Rd. #5669	Via Patton Rd.	Via P <b>a</b> tton Rd.	Via Martin Rd.
Gage Information	1979 Record	Begins	7/26	8/2	8/5	8/5	9/11	8/3	8/3	8/3
ge Info	Gage	2ero	540	530	550	550	550	520	1	200
5		Longitude	86-43-51	86-41-55	86-41-08	86-39-55	86-38-31	86-37-46	86-37-46	86-36-16
		Latitude	34-34-46	34-36-55	34-38-43	34-37-09	34-37-23	34-37-33	34-37-33	34-39-32
	Gage	Type*	s	w	œ	w	w	οc	ρι	œ
	Drainage Area	(sq. mi.)	157	153	52.8	83.9	ł	72.9	1	46.9
	River	Mile	0.0	9.4	8.2	2.4	0.0	9.	o. 0.	7.6
		Stream	10	IC	51	HSB	HSB	HSB	HSB	HSB

\*S = stage recorder; R = stage recorder at rated station; P = raingage

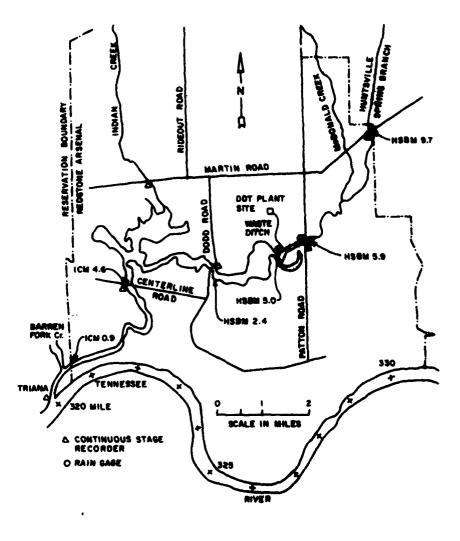


Figure 6-1: General Area Map with Sage Locations

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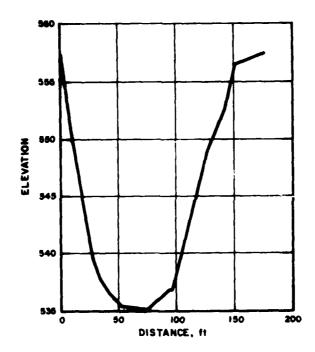


Figure 6-2 : Channel Cross-Section, ICM 0.0

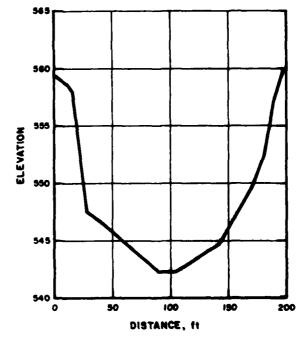


Figure 6-3: Channel Cross-Section, ICM I.O

WR28-1-550-103.6-3

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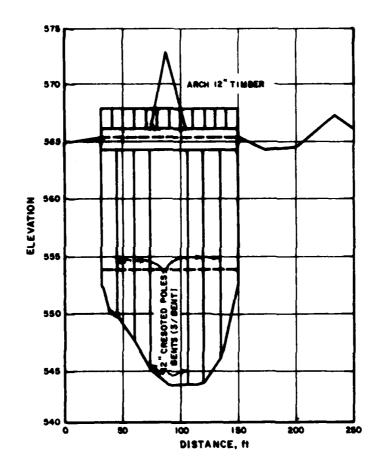


Figure 6-4: Channel Cross-Section, ICM 4.6



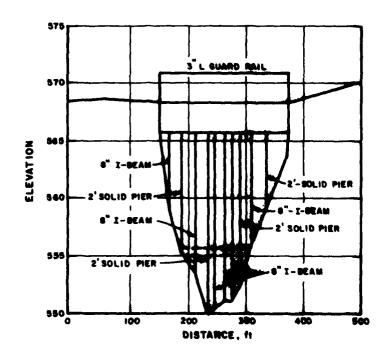


Figure 6-5 : Channel Cross-Section, HSSM 2.4



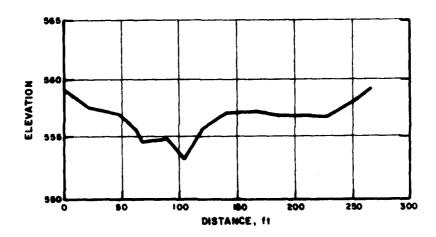
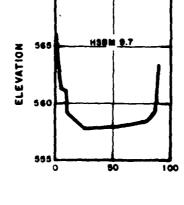


Figure 6-6 : Channel Cross-Section, HSBM 5.6



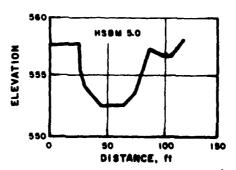


Figure 6-7 : Channel Cross-Section, HSBM 5.0 and HSBM 9.7

WR28-1-950-103.6-7

### 3.0 Sample Collection

### 3.1 Sampling Schedule

Tables 6-2 through 6-5 are a summary of the water quality sampling and velocity measurement (from which discharge is calculated) schedules for storms 5-7 at each of the four stations. No discharge measurements were made during the fifth event at the ICM 0.9 station because one of the two Savonious rotor velocity meters was out of order. The functioning meter was used at the ICM 4.6 station. The workplan was altered for the seventh storm such that discharge measurements were taken less frequently, thus the gap in the discharge record for storm 7 (see 3.2).

The sampling times are indicated on the observed stage graphs for each of the four stations in Figures 6-8 through 6-11 for the fifth and sixth events. Sampling times for the seventh storm are indicated on the respective stage graphs in Figures 6-12 through 6-15. For purposes of documentation, the stage records for events 5 through 7 at HSBM 5.0 and IC at Martin Road are given in Figures 6-16 through 6-19. (Sampling information for events 1-4 was omitted because of the presence of suspect sediment and DDTR data.)

#### 3.2 Discharge Measurements

Discharge measurements were taken using standard procedures as specified in the U.S. Department of the Interior, Geological Survey Water Supply Paper 888, Stream-Gaging Procedure, A Manual Describing Methods and Practices of the Geological Survey, Washington, D.C., 1943. Procedures for calculating depth, mean velocity and discharge are also given in this manual.

Table 6-2
Sampling Schedule
HSB at Patton Road
Storms 5-7

Date	Sampling Time	Sample 1D	Time of Velocity Measurement	Flow	Stage					
Storm 5										
1/18/80	0905-0955 2215-2240	4-A5 4-B5	0830-1005 2120-2235	882 713	559.92 559.35					
			Storm 6							
1/22/ <b>80</b> 1/23	1745-1850 0145-0215 0745-0815	4-A6 4-B6 4-C6	1730-1850 0130-0220 0735-0815	895 1178 944	559.99 560.11 560.00					
1/24	0815~0835 1055~1115	4-E6 4-F6	0815-0915 1015-1050	614 612	559.64 559.64					
1/25	0755-0815 1310-1330	4-G6 4-I6	0740-0815 1310-1335	529 489	559.50 559.48					
			Storm 7							
3/17/80	1130-1250 1330-1445 1445-1540 1715-1805	4-A7 4-B7 4-C7 4-D7	1045~1230 1250~1420 1645~1810	1725 2114 1788-A 2348	560.42 560.46 560.48-A 560.44					
3/18	2140-2150 1235-1315	4-E7 4-F7	2055-2230 1000-1305	2468 1051	560.46 560.32					
3/19	1720-1800 0920-1015 1715-1745	4-G7 4-H7 4-17	0900-1030	1404-A 1030 842-A	560.24-A 559.96 559.92-A					
3/20	1140-1230 1705-1720	4-J7 4-K7		B B	560.53-A 561.18-A					
3/21 3/22	0945-1015 1050-1100	4-L7 4-M7 4-N7	1015-1115 1015-1115 1400-1445	2073 -84 2442	563.58 565.15 565.32					
3/24 3/26 3/28	1445-1500 1405-1420 1325-1340	4-N7 4-07 4-P7	1315-1400 1345-1325	1672 2101	562.74 561.10					
3/31 4/3	1455-1515 1300-1330	4-Q7 4-R7	1420-1500 1235-1345	685 375	560.24 559.53					

A-No discharge measurement made - stage read from gage record, flow based on stage rating

B-Stage beyond range of rating table, no estimate of flow available

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Table 6-3
Sampling Schedule
HSBM 2.4
Storms 5-7

	Sampling	Sample	Time of Velocity		
Date	Time	ΙĎ	Measurement	Flow	Stage
			Table 5		
1/18/80	1120-1200	3-A5	1115-1155	483	554.56
	1600-1635	3-B5	1545 <b>-162</b> 5	687	555.00
	2100-2145	3-C5	2015-2135	787	555.30
1/10	2325-0015	3-D5	2310-2355	777	555.37
1/19	0125-0205	3-E5	0115-0200	774	555.39
	1455-1535	3-F5	1445-1530	560	555.17
			Storm 6		
1/22/80	2050-2110	3-A6	2020-2110	611	555.61
-,,	2345-0040	3-B6	2325-0040	735	555.90
1/23	0340-0445	3-C6	0330-0410	827	556.17
•	0640-0730	3-D6	0630-0710	905	556.29
	1030-1130	3-E6	1010-1120	923	556.37
1/24	0955-1025	3-F6	0910-0940	595	556.35
	1345-1405	3~G6	1340-1405	530	556.35
1/25	0910-0930	3 <b>-</b> H6	0840-0905	3 <del>9</del> 7	556.34
	1415-1435	3-16	1350-1415	390	556.32
			Storm 7		
3/17/80	1300-1505	3-A7	1230-1500	1186	556.38
-, -, <b>, .,</b>	1545-1610	3-B7	1230 1300	1300-B	556.78-A
	1730-1805	3-C7	1650-1805	1533	557.05
	2040-2100	3-D7	2040-2140	1724	557.61
	2340-2400	3-E7		1900-B	557.88-A
3/18	0120-0210	3-F7	0215-0340	1988	558.10
	0400-0435	3-G7		1980-B	558.15-A
	0600-0630	3-H7	0635-0735	1981	558.27
	0740-0810	3-17		1900-B	558.29-A
	1000-1030	3-J7	1030-1115	1825	558.35
	1120-1145	3-K7		1800-B	558.35-A
	1255-1320	3-L7	1510 1515	1760-B	558.36-A
	1530-1550	3-M7	1510-1545	1708	558.36
3/19	1745-1805 1000-1030	3-N7 3-07	0835-0950	1650-B 1140	558.35-A
3/1/	1805-1830	3-07 3-P7	UC7U*CC0U	1140 1100-B	558.33 558.31-A
3/20	1005-1045	3-27 3-Q7	0945-1050	100-K	558.74
-, <del>-</del> -	1740-1755	3- <b>R</b> 7	074.1-10JU	10,30	559.78-A
3/21	1030-1100	3-87	1100-1145	3056	563.24

Table 6-3 (continued)

Date	Sampling Time	Sample ID	Time of Velocity Measurement	Flow	Stage			
	Storm 7							
3/22	0900-0920	3 <b>-T</b> 7	0830-0950	472	564.98			
3/23	1205-1235	3 <b>-U</b> 7	1155-1315	1505	565.57			
3/24	1410-1450	3-V7	1340-1500	2570	565.06			
3/26	1325-1405	3-W7	1325-1425	2055	562.36			
3/28	1345-1415	3 <b>-X</b> 7	1310-1420	1601	560.54			
3/31	1505-1535	3-Y7	1400-1500	1099	559.88			
4/3	1135-1155	3-27	1055-1200	495	557.62			

A-Stage read from water quality sampling notes

B-Flow extrapolated between measured values

Table 6-4
Sampling Schedule
ICM 4.6
Storms 5-7

Date	Sampling	Sample	Time of Velocity	r.	a.
Date	Time	ID	Measurement	Flow	Stage
			Storm 5		
1/18/80	1430-1520	2-A5	1400-1530	625	553.45
	2045-2145	2-B5	2020-2200	581	553.88
	2245-2340	2-C5	2235-2345	441	553.93
1/19	1320-1435	2-D5			554.03-A
	1555-1640	2~ <b>E</b> 5	1545-1630	697	554.34
			Storm 6		
1/22/80	1910-2015	2-A6	1840-2035	773	554.95
	2350-0030	2-B6	2325-0030	1006	555.15
1/23	0400-0430	2-C6	0355-0440	1102	555.32
	0710-0730	2-D6	0645-0745	1203	555.42
	1050-1110	2-E6	1030-1120	1245	<b>55</b> 5.52
1/24	1110-1140	2- <b>F</b> 6	1040-1155	728	556.00
	1445-1500	2-G6	1440-1500	673	556.06
1/25	1035-1055	2-H6	0945-1025	632	556.17
	1540-1600	2-16	1505-1540	560	556.18
			Storm 7		
3/17/80	1400-1505	2-A7	1325-1520	1416	555.11
	1730-1755	2-B7		1600-B	555.66-A
3/18	0155-0320	2-C7	0115-0305	2408	556.81
	0715-0735	2-D7		2500-B	557.24-A
	1110-1130	2-E7	1055-1135	2584	557.46
0.450	1720-1740	2-F7		2000-В	557.68-A
3/19	0055-0120	2-G7	0045-0210	1398	557.90
	0645-0720	2-H7	10/5 1/00	1300-B	557.97-A
	1305-1335 1835-1900	2-17 2-J7	1245-1420	1212	558.03
3/20	0140-0210	2-57 2-K7	0020-0130	1150-B 1045	558.06-A 558.07
3/20	0630-0700	2-L7	0020-0130	1043	558.33~A
	1415-1435	2-M7	1345-1500	1935	558.88
	1840-1900	2-N7	1545 1500	1733	559.53-A
3/21	0800-0830	2-07	0830-920	3215	562.70
3/23	0955-1015	2-P7	1100-1125	342	565.58
3/24	1110-1145	2-Q7	1045-1205	1392	565.06
3/26	1100-1130	2-R7	1040-1155	2453	562.27
3/28	1030-1115	2- <b>S</b> 7	1025-1135	2314	560.08
3/31	1230-1310	2-T7	1040-1225	1656	<b>55</b> 9.71
4/3	1000-1025	2-U7	0935-1045	871	<b>5</b> 57.50

A-Stage read from water quality sampling notes B-Flow extrapolated from measured flows

Table 6-5
Sampling Schedule
ICM 0.9
Storms 5-7

	Time of						
	Sampling	Sample	Velocity				
Date	Time	tb	Measurement	Flow	Stage		
			Storm 5				
1/18/80	1500-1540	1-A5	No discharge		553.25-A		
	2010-2100	1-B5	ments made du	ring this	553.61-A		
	2300-2335	1-C5	event - see t	ext	553.68-A		
1/19	0140-0205	1-D5			553.73-A		
	1600-1625	1-E5			554.20-A		
			Storm 6				
1/22/80	1850-1945	1-A6	1835-1955	409	554.76		
	2220-2310	1-B6	2200-2315	468	554.86		
1/23	0140-0230	1-C6	0130-0245	569	554.96		
	0530-0640	1- <b>D6</b>	0540-0640	585	555.09		
	1115-1200	1-E6	1105-1220	661	555.22		
1/24	1210-1235	1-F6	1045-1245	198	555.88		
·	1620-1645	1-G6	1510-1700	211	555.97		
1/25	1040-1120	1-H6	1030-1130	543	556.06		
·	1540-1610	1-16	1530-1615	274	556.10		
			Storm 7				
3/17/80	1215-1315	1-A7	1200-1330	935	554.26		
	1800-1815	1~B7		1275-B	554.94-A		
3/18	0005-0040	1~C7	0001-0110	1609	555.67		
•	0725-0750	1~D7		1565-B	556.45-A		
	1240-1320	1-E7	1230-1430	1532	556.96		
	1800~1815	1~F7		1250-B	557.28-A		
3/19	0015-0055	1-G7	0005-0110	908	557.56		
·	0640-0700	1-H7		930-B	557.72-A		
	1300-1330	1-17	1230-1345	962	557.80		
	1800-1820	1-J7			557.83-A		
3/20	0125-0145	1-K7			557.84-A		
,	0630-0640	1-L7			557.84-A		
	1250~1315	1-M7	1230-1350	1640	558.52		
	1710~1720	1-N7			558.81-A		
3/22	1100~1155	1-07	1040-1215	981	565.14-A		
3/23	0950~1020	1-P7	0920-1035	3829	565.14-A		
3/24	1120-1155	1-Q7	1050-1210	3285	564.52-A		
3/26	1045~1120	1-R7	1010-1135	2734	561.32-A		
3/28	1000-1035	1-87	0945-1055	1817	559.60		
3/31	1035-1115	1-T7	1010-1120	1402	559.52		
4/3	1005-1045	1-U7	0945-1115	295	557.35		

A-Stages read from water quality sample notes

B-Flows extrapolated between measured values

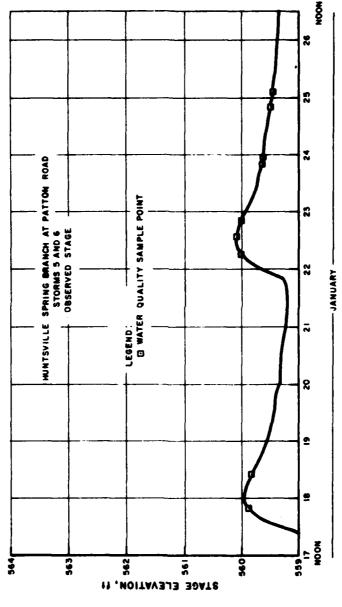


Figure 6-8: Observed Stage Graph and Water Quality Sampling Times, HSB at Patton Rd., Storms 5 and 6

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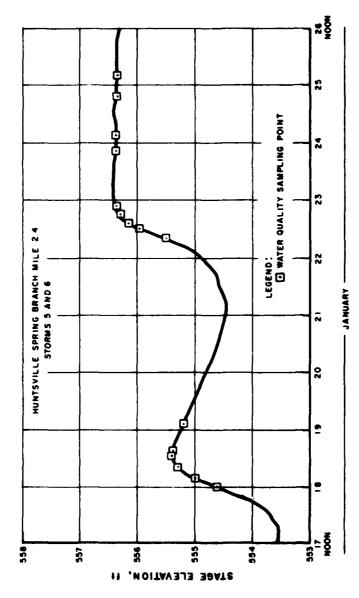


Figure 6-9: Observed Stage Graph and Water Quality Sampling Times, HSBM 2.4, Storms 5 and 6

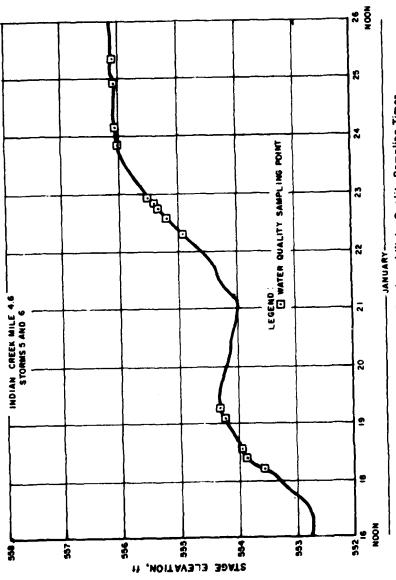


Figure 6-10: Observed Stage Graph and Water Quality Sampling Times, ICM 4.6, Storms 5 and 6

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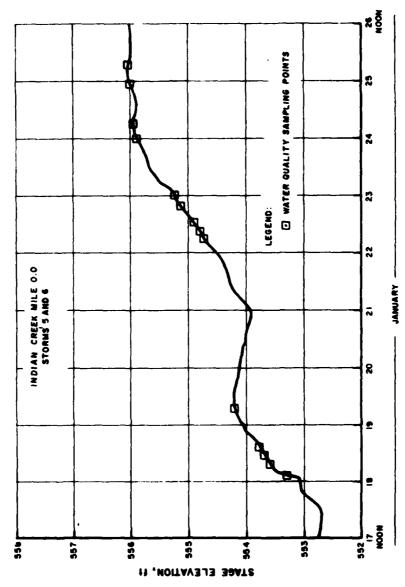
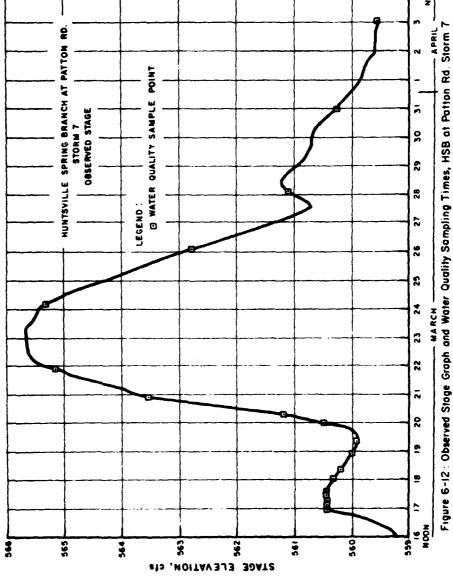


Figure 6-11:Observed Stage Graph and Water Quality Sampling Times, ICM 0.0, Storms 5 and 6

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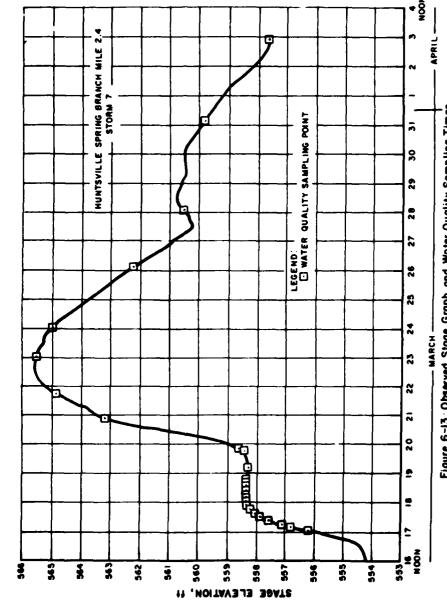


Figure 6-13: Observed Stage Graph and Water Quality Sampting Times, HSBM 2.4, Storm 7

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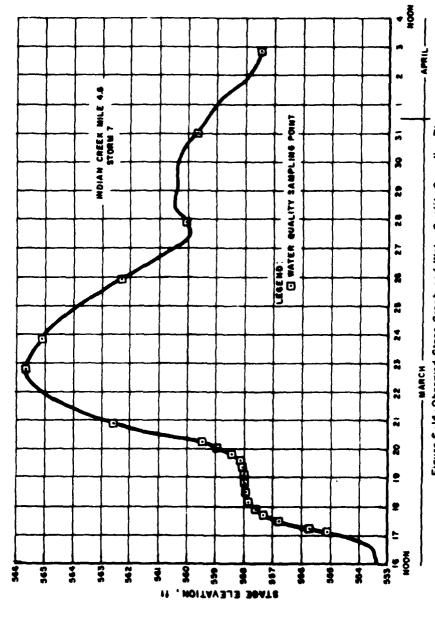
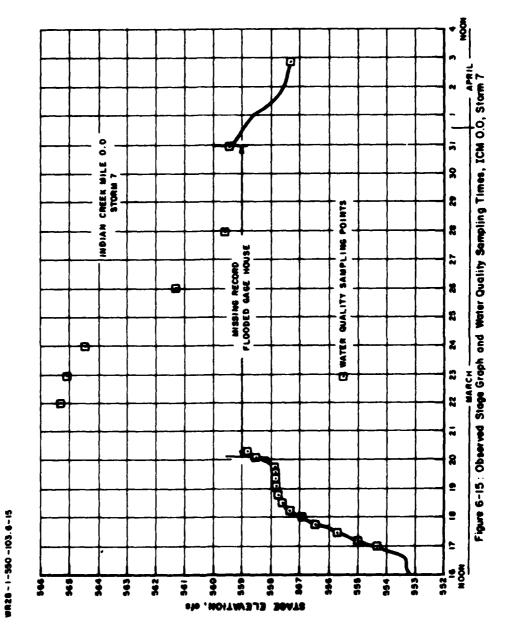


Figure 6-14: Observed Stage Graph and Water Quality Sampling Times, ICM 4.6, Storm 7

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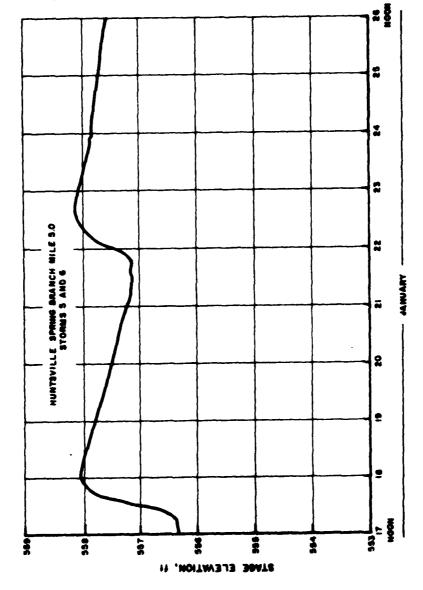


Figure 6-16: Observed Stage Record, HSBM 5.0, Storms 5 and 6

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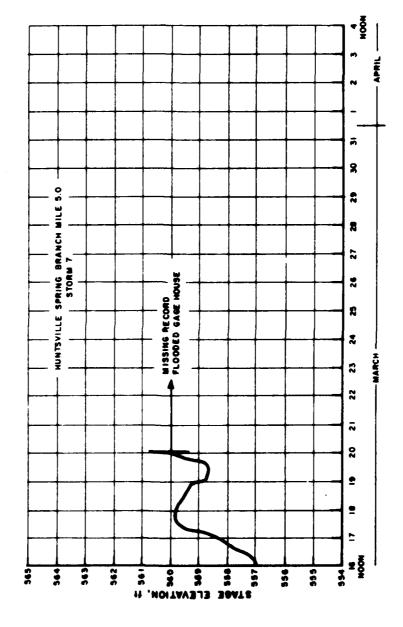


Figure 6-17: Observed Stage Record, HSBM 5.0, Storm 7

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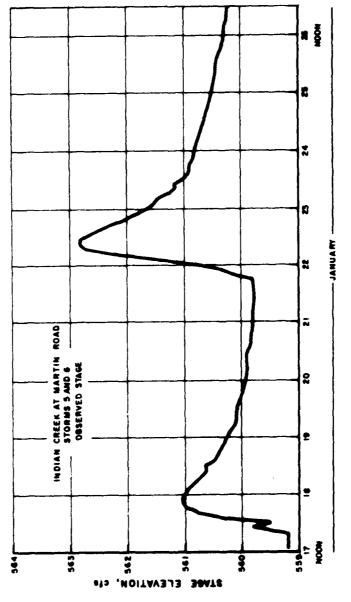


Figure 6-18: Observed Stage Record, IC at Martin Md., Storms 5 and 6

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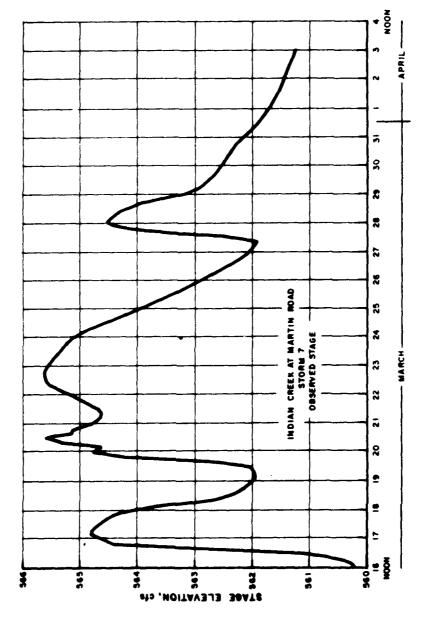


Figure 6-19: Observed Stage Record, IC at Martin Rd., Storm 7

OF FORMAL PORTS

For most measurements vertical velocity observations were taken at equal intervals across the cross section (measurements were taken at two-foot intervals). However, HSBM 5.9 at Patton Road bridge, the intervals between vertical velocity observations were varied to provide data necessary to define velocities more accurately in the sections of the channel where the flows were concentrated. Flows were not uniform across this cross section because of trash collected on the upstream side of the bridge.

A Savonius rotor current meter was used to measure flow velocity and direction at Indian Creek Mile 0.9, for storms 3-4 and 6-7. A Savonius rotor current meter was also used at Indian Creek Mile 4.6, for storms 5 and 7, and for two measurements during storm 6. Equipment malfunction necessitated the use of a Price current meter for the measurement of velocities in conjunction with the Savonius rotor current meter for most of the measurements taken at these stations, with the Savonius rotor current meter being used to give direction of flow and the Price meter used to give velocities. The Price current meter was used to make all measurements on HSB. A cosine correction to measured velocities were made where the Savonius meter indicated more than a 10-degree variation in the direction of flow from that normal to the measuring section.

No discharge measurements were taken at ICM 0.9 or ICM 4.6 during the first two storms and only three or four measurements were made at HSBM 2.4 and HSBM 5.9 during these two events in accordance with the original work plan. The recorder at HSBM 5.0 was installed before storm 3 and measurements were subsequently taken concurrently at HSBM 2.4 and HSBM 5.0. Measurements and samples were also taken concurrently

at ICM 0.9 and ICM 4.6 during storms 3-4 and 6. No measurements were made at HSBM 5.0 during storm 7 as per the revised workplan. No measurement were made at ICM 0.9 for storm 5 because the Savonius meter rotor could not be repaired in time for use nor were other current meters available for use at this station.

### 3.3 Water Quality Samples

3.3.1 The original work plan called for water samples to be collected just below the surface, 3-6 inches above the streambed, and at the third points in each vertical. Samples were to be collected at three verticals equally spaced across each cross-section. This procedure was followed through storm 4. Following storm 4, the workplan was revised after it was found that the original workplan resulted in an occasional unrepresentatively high suspended sediment concentration measured when the deep soft bottom sediments were disturbed during the depth sounding. (Consequently, sediment and DDTR data for storms 1-4 should be regarded as "suspect.") The revised workplan emphasized that the sampler should not touch the streambed. Also, a 6-inch extension and a 15-pound weight were added to each sampler to provide additional stability. During storms 5-7, four samples were collected in each vertical; just below the water surface and at 25, 50, and 75 percent of the depth. The depth for each vertical was determined when the discharge measurement was taken. Extreme care was exercised to measure the depth for each sample. During storms 6 and 7 an additional sample was collected at 60 percent of the depth in each vertical. Extra samples were collected at HSBM 2.4 during storm 1 as specified in the work plan.

All samples at ICM 0.9 and ICM 4.6 were collected near the quarter points in the cross section because of the uniform flow. Samples at HSBM 2.4 and HSBM 5.9 were collected at points with the greatest velocities as determined from the discharge measurements. The samples at HSBM 2.4 were collected at or near the same points in the cross section for all the storms. Because of trash collected on the upstream side of the bridge at HSBM 5.9, the points of flow concentrations varied from storm to storm and at varying times during each storm.

Samples collected at the lower station on Indian Creek for storms 1 and 2 were collected at ICM 1.7 because this was the location of the arsenal boundary cable. A cable was subsequently installed across the river at ICM 0.9 and flows were measured and samples collected at this location for storms 3-7.

All samples were collected with a TVA instantaneous horizontal trap sampler designed for suspended sediment sampling and having a capacity of about one pint. Two grabs for a total volume of about one quart were made at each sampling point in the cross-section.

Special samples were also collected during the first three storms from springs and streams in the vicinity of the old plant site.

All samples collected were transferred from the sampler to either pint or quart Mason jars sealed with an aluminum foil liner in a standard Mason jar lid. The samples were stored as soon as possible (generally within four hours) in a cooler on the arsenal where the temperature was kept at 40°F until the samples were transported to the laboratory in Chattanooga.

3.3.2 Four Helley-Smith bedload samplers were used during the first four storms in attempt to detect bedload sediment transport.

Helley-Smith bedload samplers were developed by the U.S. Geological Survey and are described in the USGS report, "A Field Calibration of the Sediment-Trapping Characteristics of the Helley-Smith Bedload Sampler," Open File Report 79-411.

During storms 1 and 2, two bedload samplers were placed at ICM 4.6 and one each at HSBM 2.4 and HSBM 5.9. During storms 3 and 4, a sampler was placed at each station except the downstream sampler was placed at ICM 1.7 because the cable used at ICM 0.9 would not support the sampler.

The sampler was placed at the point in each section where the greatest visual velocity occurred. The sampler was slowly lowered to the streambed and then raised 3-5 inches. Each sampler was raised periodically during the storm for a visual inspection of the amount of material trapped, but in each case the sampler was kept in place for the duration of the sampling period. After reviewing the results from these samples, bedload sampling was discontinued after the fourth storm.

The bedload samples were obtained by removing the nylon mesh bag from the sampler, wrapping the bag and its contents in aluminum foil, sealing the foil container, and transferring the samples to the cooler prior to shipment to Chattanocga.

### 4.0 Sample Handling and Laboratory Methodology

Quart samples were taken from each of the sample points in the cross section (as described in 3.3.1). The samples were stored at 4°C until shipment to the laboratory for processing. The samples remained at room temperature until after they were processed when they were again stored at 4°C until the time of analysis.

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Upon receipt at the laboratory, the samples were first allowed to settle, then the total volume, visual estimation of the amount and appearance of suspended particulate, and the turbidity were determined on each sample. The sample was shaken vigorously immediately prior to turbidity measurement. The scheme for compositing samples and subsequent analyses were determined based on the results of the visual observations and turbidity measurements.

Each of the samples to be composited was poured through a no.

230 sieve into a 14-liter aluminum churn splitter and a one-liter and

250-ml aliquot removed for analysis. (See quality assurance document
for special studies concerning the use of the churn splitter.)

The material retained on the sieve was transferred to a preweighed glass dish. The sample was air-dried and reweighed to determine the concentration (mg/1) of sand (>63µ material) in the composite sample. The sand was then transferred to a glass vial for DDTR analysis if there was at least 0.2 g of sand. If the sample retained on the sieve was less than 0.2 g, it was retained for volatile solids analyses only. If there was greater than 0.5 g of sand, the sample was split and both DDTR and volatile solids were analyzed. (See quality assurance document for analytical methodologies.)

One liter of the composited sample was filtered through a preweighed glass fiber filter. The filtrate was extracted for DDTR incorporating the addition of selt to increase the extraction efficiency. (See quality assurance document for details on the special study concerning the addition of salt.)

The glass fiber filters were air-dried, desiccated, and reweighed. The filters were analyzed for DDTR by the sediment procedure. (See quality assurance document for analytical methodology.)

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On all the 250-ml samples, two nonfilterable residue determinations were made. First the sample was filtered through a preweighed glass fiber filter and nonfilterable residue determined. The filtrate was then filtered through a preweighed 0.45  $\mu m$  membrane filter and that nonfilterable residue also determined. The results were reported as nonfilterable residue retained on a glass fiber filter and nonfilterable residue passing through a glass fiber filter but retained on a 0.45  $\mu m$  membrane filter. Volatile suspended solids were also determined on the residue remaining on the glass fiber filter.

For samples collected during the seventh rain event, particle size analysis was performed on one sample set from each station collected near the peak of the hydrograph and on one during the recession of the hydrograph. The analysis was determined by the "pipette" procedure. (See quality assurance document for analytical methodology.)

The above sample handling and analysis procedure was used on rain events five through seven. Rains one through four were handled similarly but with the following exceptions: DDTR was determined on dissolved and total fractions. However, the percent volatile solids and concentration of solids that passed through a glass fiber filter but retained on a 0.45 µm membrane filter were not determined.

### 5.0 Data Tabulations

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### 5.1 Hourly Rainfall Data

Hourly rainfall data are given in Tables 6-6 through 6-14 for the period of August 3, 1979, to April 17, 1980. Data are missing for the periods of August 7-9, 1979, and January 24-31, 1980.

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### TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL

DATA SERVICES BRANCH

MONTH August 1979

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-36-

B - 24 Hour Total Ending at 8 a.m. A - 24 Hour Total Ending at 7 a.m.

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STA. NO. 878

TABLE 6-7

TVA 4210 (NRS-5-79)

TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL DATA SERVICES BRANCH

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B - 24 Hoar Total Ending at 8 a.m. A - 24 Hour Total Ending at 7 a.m.

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TABLE 6-8

### TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL DATA SERVICES BRANCH

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A - 24 Hour Total Ending at 7 a.m. B - 24 Hour Total Ending at 8 a.m.

STA. NO. 378

TABLE 6-9

TVA 4210 | NRS-5-79)

TENNESSEE VALLEY AUTHORITY
HOURLY RAINFALL DATA SERVICES BRANCH MONTH

TOTAL 1.47 S F F 01. .23 .01 November 1979 8 .20 œ .03 .04 .06 8 :03 .03 . 10 . 12 .05 .01 S 01. .10 . 18 .10 .17 .03 .20 .15 .03 Noor .37 . 16 . 22 STATION Huntsville Spring Branch at Patton Road .20 .28 10 .25 .28 В .01 .05 .32 8 .03 80 A. M. 9 8 .03 .04 

B - 24 Hour Total Ending at 8 a.m. A - 24 Hour Total Ending at 7 a.m.

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MONTHLY TOTAL 7.00

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### TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL DATA SERVICES BRANCH

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A - 24 Hour Total Ending at 7 a.m. B - 24 Hour Total Ending at 8 a.m.

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STA. NO. 878

TABLE é-11

TVA 4210 (NRS-5-79)

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TENNESSEE VALLEY AUTHORITY **HOURLY RAINFALL** 

DATA SERVICES BRANCH

TOTAL .02 .67 8 .07 .10 .18 .22 .02 .01 .04 12 MONTH January 1980 .26 .02 .05 P.M. .01 . 10 . 05 .03 .02 ē .04 . 02 .07 .07 80. က Bucket Stoler 9 10 .02 -Lost Record 9 .03 Noor 80. .09 90. STATION Huntsville Spring Branch at Patton Road .05 .05 .22 . 10. .02 .15 В 70. .02 .13 10. <u>6</u> 6 .29 .05 7 .04 .01 .12 0. .16 60: 17 . 21 .02 .02 .01 90 -41-

B - 24 Hour Total Ending at 8 a.m. A - 24 Hour Total Ending at 7 a.m.

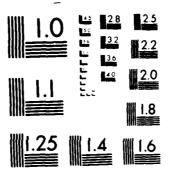
### TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL DATA SERVICES BRANCH

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### HOURLY RAINFALL

DATA SERVICES BRANCH

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A - 24 Hour Total Ending at 7 a.m. B - 24 Hour Total Ending at 8 a.m.

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HOURLY RAINFALL
DATA SERVICES BRANCH

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A - 24 Hour Total Ending at 7 a.m. B - 24 Hour Total Ending at 8 a.m.

### TENNESSEE VALLEY AUTHORITY HOURLY RAINFALL DATA SERVICES BRANCH

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	4		-	-	L	_	-		Н		-		23 . 3	20. 20.		Ц		Ц	_		4	Ц	_		_	-	L	H	-	-		-
	<u>۳</u>		_	-	L	L	-	-	H	_	$\sqcup$			3.	L	Н	_	L	L		4	Ц	_	L	L		L	Ц	Щ	L	H	-
1	2	-	-	H	L	L	L		Н		Н		06 - 9			Н			-	_	4	Ц	_	_	-	H	L		Н	-		H
HI		<u> </u>	27	لِي	Ļ	ي	Ļ	_	ڸۣ	٦	Ų		97 . 2	پا			6	Ļ			ل	لِ	لِ		4	<u>ا</u>	Ļ	Ļ	<u></u>		ليا	Ļ

A - 24 Hour Total Ending at 7 a.m. B - 24 Hour Total Ending at 8 a.m.

### 5.2 Discharge Measurements

Tables 6-15 through 6-21 are a summary of the discharge measurements taken at each of the stations for the duration of the study. Where the method of measurement is not indicated, the procedure was to measure velocities at .6 of the depth if the depth was less than three feet, and at .2 and .8 of the depth if the depth was greater than three feet.

### 5.3 Suspended Sediment and DDTR Data

A complete listing of all suspended sediment and DDTR analyses are included as an Appendix to this report. Data for storms 1-4 should, however, be considered as suspect (see 3.3.1). Tables 6-22 through 6-25 are a summary of the suspended sediment and DDTR data for storms 5-7. These tables itemize sample data slong with the corresponding measured flows.

### 5.4 Bed Sediment Data

Bed sediment samples were collected at the four sampling stations during the first four storm events. Two sizes of bed load samplers were used. One sampler with a 4" x 4" opening was used at ICM 4.6 during storm 1, HSB at Patton Road during storm 2 and ICM 1.7 during storms 3 and 4. At all other times, a bed load sampler with a 3" x 3" opening was used. Table 6-26 summarizes the bed sediment data.

### 5.5 Special Samples

Special samples were collected in and around the old DDT plant site to determine if there continued to be any significant inputs from

Table 6-15

Discharge Measurement Summary

Huntsville Spring Branch at Martin Road

Fime req'd Hrs	1.00
Gage Ht. Change	0 + .04
No. Meas. Sec- tions	30 22 28 21 20
Method	44 m m m m m m
Flow	53 175 76 96 590
Gage Height Ft	559.93 561.68 560.00 560.25 562.91
Mean Velocity fps	. 50 . 49 . 69 . 42 1. 35
Arca Sq. Ft	106 360 111 230 437
Width	65.0 82.0 62.0 76.0 82.0
Made By	WDH WDH CEJ CEJ-CH
Time	1310 1200 1205 1415 1555
Date 1979	7-13 7-26 8-7 8-27 9-13
ઠ્ઠ	42440

A - measured at .6 of the depth

B - measured at .2, .6, and .8

Table 6-16

## Discharge Measurement Summary

# Huntsville Spring Branch at Patton Road

										₽	Sage	
						Mean	Gayo			Meas.	Ht.	Tine
				Width	Arca	Velocity	Helyht	₹10%		Scc-	Change	red'd
ġ	Cate	Time	Made By	F.	Sq Ft	fps	Ft	cfs	Method	tions	F.	Hrs
	1973											
-	8-16	1120	DEM-H	117	529	.45	559.13	240	α,	56	08	1.50
7	8-31	0160	DEM	118	512	.20	558.75	104	æ	56	01	1.70
~	3-31	1200	DEM	118	515	.22	558.74	111	æ	56	0	1.30
4	3-31	1500	DEN	118	490	.21	558.74	103	œ	25	0	1.40
S	9-1	0060	DEN	118	503	.16	558.66	80	Ø	24	0	1.30
9	3-1	1200	DEM	116	161	.14	558.66	70	<b>E</b>	22	+.01	1.25
7	9-3	0715	JRL-B	118	692	1.86	560.28	1286	Ø	25	0	1.50
α	9-27	1700	CEJ, BJL	120	640	.86	559.72	548	æ	25	+.10	1.50
6	9-29	9030	CEJ, BJL	120	683	1.30	560.05	688	Ø	17	+.02	1.00
9	9-28	0730	A,N,N	120	716	1.27	560.10	912	æ	25	03	1.80
11	9-29	1430	G,N,N,D	120	651	1.12	560.02	738	63	25	03	1.50
12	87-6	2240	BJL-WDH	120	661	1.04	559.87	989	Ø	11	01	.83
13	67-6	1245	B.B.S.	120	613	.70	559.66	436	m	56	01	1.20
14	9-30	0840	BJL-G	120	607	.45	559.46	272	Ø	17	01	1.00
15	10-1	1415	OEM	120	265	.39	559.19	233	æ	56	0	1.33
91	10-7	1335	TEG-WDH	120	595	.29	559.10	173	63	17	0	1.00
11	11-23	1820	JRL-TEG	120	648	1.06	559.85	689	æ	25	+ 06	1.22
18	11-24	0015	JRL-TEG	120	<b>98</b> 0	1.21	559.98	825	æ	25	+.02	1.38
13	11-24	0070	8-P	120	663	1.21	559.98	801	60	25	01	1.27
20	11-24	1510	B-P	120	647	1.03	559.87	999	Ø	25	02	1.25
21	11-25	0045	L-J	120	628	.93	559.75	584	<b>6</b>	25	01	1.17
22	11-25	1230	8-P	120	632	.73	559.65	460	α	52	02	1.25
23	11-26	1435	L-8-P	120	641	69.	559.59	442	œ	25	0	1.05
24	11-27	1400	L-8-E	120	298	.52	559.40	312	œ	25	0	1.20
25	11-28	1025	G-E	120	965	.48	559.32	284	œ	25	0	1.00

Table 6-16 (continued) Discharge Measurement Summary

Huntsville Spring Branch at Patton Road

						N S	o Del			No.	Gage Ht.	Time
				Width	Area	Velocity	Height	Flow		Sec-	Change	req'd
Ş	Date	Time	Made By	Ft	Sq Ft	fps	Ft	cfs	Method	tions	Ft.	Hrs
	1980											
<b>5</b> 6	1-18		EOM-TEG	120	199	1.33	559.92	883	æ	56	+.04	1.57
27	1-18		L-N	120	672	1.06	58.85	713	æ	25	02	1.25
28	1-22		d-N	120	693	1.29	559.99	895	<b>60</b>	25	0	1.33
53	1-23		N-E	120	684	1.72	560.11	1178	æ	13	0	.83
30	1-23		M-I.	120	999	1.42	<b>260.</b> 00	944	æ	13	0	.67
31	1-24		N-E	120	605	1.01	559.64	614	<b>6</b> 0	13	02	1.00
32	1-24		ပ <del>-</del> ပ	120	624	.98	559.64	612	æ	13	0	. 58
33	1-25	0740	W-I	120	621	.83	559.60	530	<b>£</b>	13	01	. 58
34	1-25		L-M	120	582	.84	559.48	489	m	13	0	.42
35	3-17		H-B	120	725	2.38	560.42	1725		17	+.04	1.50
36	3-17		H	120	755	2.80	560.46	2114*		19	07	1.25
37	3-17		H	120	191	2.97	560.44	2349*		17	+.04	1.25
38	3-17		H-B	120	809	3.05	560.46	2468*		19	+.02	1.42
39	3-18		I-H	120	747	1.41	560.32	1051*	œ	20	06	1.83
6	3-19		<b>L</b> -G	120	675	1.53	559.97	1030*	æ	25	01	۲.
41	3-21		N-E	120	1316	1.57	563.58	2073*		13	+.09	1.0
42	3-22		L-B	120	1356	.062	565.15	-84*	υ	13	+.05	.97
43	3-24		ე- <u>ე</u>	120	1390	1.76	565.32	2442*	υ	13	03	.72
44	3-56		C-B	120	1044	1.60	562.74	1672*	υ	13	05	.75
45	3-28		ပ-ပ	120	968	2.35	561.10	2101*	υ	13	+.02	.67
46	3-31		ပ <u>-</u> ပ	120	756	.91	560.24	<b>4</b> 989			01	.63
47	4-3		J-H	120	704	.53	559.53	375	ပ	50	0	.92

A - measured at .6 of the depth

B - measured at .2, .6, and .8

C - measured at .2 and .8 of the depth

\$ 10 m

\*Flows affected by hackwater

Table 6-17

Discharge Measurement Summary

### HSBM 5.0

Time req'd Hrs		œ.	œ̈.	9.	1.0	9.	۲.	œ	4.	9.	œ.	۲.	9.	٥.	9.	6.	.7	9.	1.0
Gage Ht. Change Ft.		+.12	+.02	01	0	-:01	02	01	+.01	01	+.05	0	0	0	0	0	02	0	0
No. Meas. Sec- tions		16	17	15	15	15	16	14	14	13	91	16	14	15	15	14	14	14	15
Method		Ø	Ω	æ	æ	Ø	æ	æ	æ	œ						æ			æ
Flow		297	436	335	11	113	137	145	213	165	356	433	409	330	298	301	212	192	194
Gagc Height Ft		557.63	558.08	558.08	558.85	558.14	557.59	557.28	557.34	557.04	557.90	558.00	557.94	557.80	557.75	557.69	557.52	557.47	557.41
Mean Velocity fps		1.12	1.46	1.28	.23	.40	.54	.63	.90	.68	1.31	1.50	1.37	1.26	1.10	1.20	.93	.80	.812
Area Sq Ft		263.6	297.9	261.5	336	282	255	231	237.3	213.2	271.4	289.4	297.5	261.8	271.9	251.5	227.5	40.0	239.4
Width		9	9/	70	82	75	70	64	65	9	72	72	65	67	29	65	65	9	62
Made By		H-1	L-N-J	1-н	ŋ	CEJ, LDH	L-S	L-N	L-N	H-N	<b>L</b> -G	Z-E	M-I	2-E	t-1	N-E	<b>1</b> -0	L-G	J-G
Time	٠	1900	9090	0110	1010	1355	0935	1015	1555	1035	2200	1140	1710	0810	2135	1630	1527	1315	1000
Date	1979	9-27	9-58	9-29	9-30	10-1	10-2	10-3	10-4	10-5	11-23	11-24	11-24	11-25	11-25	11-26	11-27	11-28	11-29
Š.	1	-	7	m	4	S	9	7	α	6	20	11	15	13	14	15	16	17	18

Table 6-17 (continued)

## Discharge Measurement Summary

HSBM 5.0

Time	reg.d Hrs		1.17	.72	.67	. 78	.83	. 55	.75	.67	.75	.75	.75	.67	.67	.55	. 50
Gage Ht.	Change Ft.		+.02	0	0	01	0	0	0	+.02	0	0	01	0	0	0	0
Meas.	tions		15	91	16	16	16	15	16	16	16	16	16	16	16	15	15
	Method		æ	æ	æ	<b>6</b> 0	m	æ	æ	æ	60	æ	æ	æ	æ	æ	œ
7. 30	cfs		444	445	424	387	369	314	454	485	200	485	450	347	348	334	314
Gage Height	Ft		557.99	558.02	557.99	558.00	557.90	557.74	558.04	558.10	558.10	558.08	558.06	557.80	557.80	557.66	557.63
Mean Velocity	fps		1.50	1.54	1.54	1.52	1.36	1.24	1.63	1.70	1.74	1.69	1.63	1.34	1.32	1.26	1.20
Arca	Sq Ft		295	288	275	255	272	253	279	586	288	287	276	258	263	264	260
Width	Ft		20	73	73	72	72	49	73	73	73	73	73	11	11	99	29
	Made By		DEM-C	L-B	L-N	L-N	r-n	M-I	N-E	N-E	N-E	N-E	N-E	N-E	N-E	W-I	L-M
	Time		1105	1600	1950	2300	0210	1440	2045	2330	0330	0745	1000	0915	1355	0835	1400
	Date	1980	1-18	1-18	1-18	1-18	1-19	1-19	1-22	1-22	1-23	1-23	1-23	1-24	1-24	1-25	1-25
	Š.		19	20	21	22	23	24	22	<b>5</b> 6	27	<b>58</b>	59	30	31	32	33

B - measured at .2, .6, and .8 of the depth

Table 6-18

Discharge Measurement Summary HSBM 2.4

										Ċ.	Cago	
						Mean	Cage			Meas.	Ħ.	Tine
				Width	Arca	Velocity	Height	Flow		Soci	Change	red, q
9	Date	TIEC	Made By	Ft	Sq rt	fps	7.	cfs	Method	tions	1	IIrs
	1979	•										
~	9-19	1425	НОМ	84	286	0.95	555.46	274	æ	22	0	. 80
7	8-31	0350	MDH	9	293	0.05	555.56	15	<b>c</b>	22	+.05	1.25
m	8-31	1230	MDH	84	304	0.35	555.59	106	Ф	22	02	1.40
4	8-31	1455	CES	84	290	0.48	555.55	140	œ	23	01	1.25
'n	9-1	0060	CEJ	81	229	0.61	554.90	140	<b>6</b> 0	21	+.04	0.90
9	9-1	1155	CEJ	81	239	0.29	555.07	69	മ	21	02	1.00
7	9-1	1615	CEJ	81	234	0.57	554.96	132	æ	22	06	1.00
æ	9-2	0315	CEJ	83	284	1.97	555.54	260	æ	17	+.04	1.30
6	9-5	1115	TEG-LPH	83	288	2.53	556.05	729	ø	23	+.10	1.10
10	9-2	2215	RWB-JHS	83	351	2.59	556.35	910	æ	23	02	1.70
11	9-3	1040	JRL-CEJ	103	357	2.32	555.99	829	<b>4</b>	23	02	1.00
12	6-27	1850	CEJ-G	83	260	0.86	555.62	223	æ	22	+.02	.83
13	9-28	9090	R.S.E.	96	365	1.61	556.22	59	æ	25	+.12	1.20
14	9-29	0115	CEJ-G	106	430	1.56	556.85	699	æ	22	+.01	C.1
15	9-30	1015	CEJ	163	685	0.35	558.74	317	Ø	7.7	01	1.1
16	10-1	1355	HQM	133	587	0.53	557.97	311	æ	17	03	.63
17	10-2	0930	WDH-TEG	125	505	0.51	557.28	259	m	21	01	1.00
18	10-3	1010	TEG	115	441	0.51	556.84	227		24	01	1.00
19	10-4	1620	H-9	107	374	0.56	556.23	208		23	0	. 92
20	10-5	1335	W.D.H.	105	370	0.62	556.03	229		19	01	1.00
21	11-23	1000	S-J	83	197	1.80	554.44	353		18	+.05	.67
22	11-24	1135	P-B	102	308	2.07	555.40	638		22	+.02	. 95
23	11-24	1705	CEJ	83	288	2.43	555.46	700		18	+.01	.83
24	11-25	080	B-P	100	298	1.80	555.53	536		23	0	1.17
25	11-25	2135	CEJ	83	289	1.54	555.61	444		18	١.04	1.17
<b>5</b> 6	11-26	1600	B-P	102	364	1.04	556.02	381		22	+.03	. 73
27	11-27	1645	B-P-G-L	100	403	0.591	556.62	238		17	0	5/.
28	11-28	1315	S-E	82	378	0.725	556.67	274		18	01	
59	11-29	1030	d - X	85	390	0.665	556.68	259		18	٠.0]	.75

Table 6-18 (continued)

### Discharge Measurement Summary

HSBM 2.4

ě	1100	00.7	IIrs		.67	.65	1.3	54.	. 75	. 75	.83	1.25	. 75	.67	1.17	.53	940	.42	Ç.	2.50
Gage	Ξ ۲	Change	Ft.		+.08	+.02	+.05	01	0	01	+.08	÷.09	+.04	+.03	+.01	c	0	0	0	+.50
No.	Moas.	Sec-	tions		11	18	18	18	18	18	18	18	18	21	50	12	12	12	12	50
			Method						Œ	æ	<b>E</b>	æ	æ	ස	<b>E</b>	<b>E</b> 3	æ	<b>E</b>	æ	
		Flow	cfs		493	687	787	111	774	260	611	735	827	305	923	565	530	397	390	1186
,	Cago	Height	-F		554.56	554.00	555.30	555.37	555.39	555.17	555.61	555.30	556.17	556,29	556.37	556.35	556,35	556.34	556, 32	556.38
	Mean	Velocity	fps		2.32	2.78	2.85	2.78	2.17	2.18	2.09	2.34	2.44	2.38	2.43	1.57	1.41	1.08	1.05	2.96
		Arca	Sq Ft		208	247	276	279	280	257	262	314	339	380	380	379	375	368	370	400
		Width	7.		80	82	82	83	82	82	82	83	82	32	ľΰ	104	104	104	104	100
			Made By		CEJ-G	CEJ-G	CEJ-WSP	CEJ-WSP	CEJ-WSP	CEJ-SIC	CEJ-WSP		CEJ-WSP	CEJ-WSP	CEJ-WSP	S-P	S-P	ပ <del>-</del> ပ	ე-ე	CEJ-JKB
			Time		1115	1545	2015	2310	0115	1445	2020	2325	0330	0630	1010	0160	1340	0840	1350	1230
			Date	198c	1-18	1-18	1-18	1-18	1-13	1-19	1-22	1-22	1-23	1-23	1-23	1-24	1-24	1-25	1-25	3-17
			5		30	31	32	33	34	35	36	37	33	39	C <del>?</del>	7	45	43	44	45

(continued)

Table 6-18 (continued) Discharge Measurement Summary

HSBM 2.4

Time	reg.d		1.23	1.09	7: 1	00.1	. 75	.53	1 22	1.12	. 75	1.33	19	1.08	e.	1.33	. 75	.75
Sage Ht.	Change Ft.		77.	77	96.*+	+.03	ŗ	c.	c	÷.12	ςυ·+	+.04		€0	05	÷.05	05	.01
io. Mras.	Src- tions		5	23	17	ú	30	17	56	30	11	7.	13	15	15	17	13	16
	Method	=								ပ			æ	83	۳.	æ	en:	8
ī	r 10%		:533	177.	1989	1661	1325	1703	11:40	1036	3056	-472	1565	2570	2755	しい	1000	495
obre	nolynt Ft		547.05	157.61	558.10	55B.27	558.35	558.36	558.33	559.74	563.24	1,6.1.99	565.57	565.46	562.36	560,54	559,88	557.62
Mean	fps		3.22	3.09	3.09	2.86	40.0	2.57	1.72	118	1.94	72.	08.	1.48	1.78	1.70	1.36	. 24
, 1	Sq. Ft		477	558	644	6.93	599	66.4	664	697	1576	1762	1945	1732	1156	9.15	30£	529
447,53	Ft		109	821	1.20	140	1.1:)	145	1.40	160	180	194	210	180	175	150	145	126
	Made By		CEJ-JKB	CEJ-JKB	S-F	5-1	S-P	J-1	A-1:	L.G.A.11	S-P	L-B	H-1	H1	H-B	H-L	=	H-L
	Time	0 (continued)	1650	29:10	0215	06.35	1030	1510	0835	0945	1100	0830	1155	1340	1325	1310	1400	1055
	Date	80 (con	3-17	3-17	3-13	3-14	3-18	3-13	3-15	3-20	3-21	3-22	3-23	3-2:1	3-26	3-28	3-31	4-3
	2	161	9	47	48	49	20	21	25	53	24	25	56	57	58	89	9	61

A - measured at .6 of the depth

B - measured at .2, .6, and .8 of the depth

C - measured at .2 and .8 of the depth

Table 6-19
Discharge Measurement Summary
ICM 4.6

Time req'd	7	1.70	1.33	2.50	1.25	1.40	1.00	;	1.50	1.25	1.00	1.40	2.58	. 44	. 75	1.00	.75	.65
Gage Ht. Change Ft.	c	+.08	+.02	+.13	04	03	0	06	02	02	+.04	+.02	+.06	01	0	0	02	01
No. Meas. Sec- tions	,	25	56	<b>5</b> 6	52	17	17	17	17	17	25	25	25	13	13	13	13	13
Method	a	a m																æ
Flow	202	899	632	-445	687	551	362	488	217	349	861	593	197	465	80	369	587	424
Gage Height Ft	7	555.30	556.30	557.40	558.67	558.00	557.20	556.72	556.21	556.00	554.18	555.68	556.49	556.65	556.61	556.64	556.56	556.22
Mean Velocity fps	ç	88.	.57	.36	.49	.41	. 28	.42	.19	.31	. 98	.54	.17	.39	. 32	.30	.48	. 38
Arca Sq Ft	9101	1026	1107	1240	1394	1354	1308	1158	1142	1124	874	1093	1148	1192	74	1238	1218	1112
Width		120	119	119	120	120	120	115	120	120	119	120	120	120	120	120	120	120
Made By	<b>1</b>	B-S	BSBE	BSB	CEJ	MDH	WDH-TEG	TEG-LPH	TEG-LPH	WDH-WSP	B-P	B-P	LEWIS	LEWIS	S-E	N-P	N-P	J-L
Time	34.45	1345	1310	0940	1200	1000	1040		1105	1115	1000	1130	0820	0180	1500	0830	1345	1310
Date	1979	9-5	9-28	9-29	9-30	10-1	10-2	10-3	10-4	10-5	11-24	11-26	11-27	11-28	11-28	11-29	11 - 29	11-30
NO	-	, 7	٣	4	S	9	7	80	6	10	11	12	13	14	15	16	17	18

Table 6-19 (continued)

			Time	p,boa	Ilrs	1.45	1.65	1.13		.75	1.95	1.12	.75	1.00	.83	1.23	æ,	.67	. 58	1.92	1.83	.65	1.38	1.33	1.22	1.17	.83	. 38	1.17	. 83	1.00	1.50	.83
		obr!,	Ht.	Change	-1 -1	c1.+	+.07	+.02		+.01	+.10	*0.+	+.35	+.33	+.03	+.31	+.31	0	+.01	+.30	+.20	+.33	+.33	င	97.+	c	+.1.+	01	02	05	+.03	03	01
		Ċ.	.tras.	300-	Clons	25	24	54		13	23	13	13	13	13	13	13	13	13	22	13	13	13	65	91	13	11	•	14	7	14	14	14
					Method	œ	æ	æ		<b>60</b>	œ	æ	æ	æ	æ	æ	<b>6</b> 2	æ	Ø	æ		U		ပ					U		U	υ	υ
Z				•	cfs	625	581	141		269	773	1006	1102	1203	1245	728	673	632	<b>26</b> 0	1416	2403	2584	1398	2121	1935	1045	3215	342*	1392*	2453	2314	1656	371
nt Summary			Gage	Herript	7.	553.45	553.38	553.33		554.34	554.95	555.15	555.32	555.42	555.52	556.00	556.06	556.17	556.13	555.11	556.91	557.46	557.9	558.03	558.38	558.07	562.70	565.58	565.06	562.27	560.03	559.71	557.50
Discharge Measurement	ICM 4.6		Mean	::	fps	62.	.68	.51		.77	.85	1.01	1.11	1.14	1.18	.64	. 59	. 57	.51	1.47	2.05	1.98	1.07	916.	1.33	.918	1.64	.20	.63	1.31	1.44	1.06	. 68
ischarge				Area	Sq Ft	795	857	362	Vold	406	910	66	966	1056	1056	1130	1146	1107	8011	1006	1176	1304	1312	1323	1460	1138	1957	9691	2194	1869	1191	1563	1272
Ω	1			Width	7.	120	120	120		120	110	120	120	120	120	120	120	120	120	120	120	120	120	119	119	120	120	85	120	120	120	120	120
					Made By	027-13	B-C	3~€	9-:5	CEJ-SIC	3-5	<b>3</b> -3	3-5	B-5	3-8	S-5	S-P	5-5	9-0	I-B	L-E	D-N-7	N-4	CEJ	CEJ	N-4	g-8	<b>1-</b> 0	H-J	н-в	H-L	x	J-H
					Time	1400	2020	2235		1545	1840	2325	0355	0645	1030	1040	1440	0945	1505	1325	0115	1055	0045	1245	0050	1345	0830	1100	1045	1040	1025	1040	0935
					Date:	1-13	81-1	1-18	1-13	1-13	1-33	1-22	1-23	1-23	1-13	1-24	1-24	1-25	1-25	3-17	3-18	3-18	3-19	3-19	3-20	3-30	3-21	3-23	3-74	3-26	3-28	3-31	4-3
					9	19	20	21	22	23	24	25	<b>5</b> 6	27	78	59	ő	=	32	33	<b>4</b>	35	36	33	38	39	<b>9</b>	41	45	43	44	45	46

A - measured at .6 of the depth
B - measured at .2, .6, and .8 of the depth
C - measured at .2 and .8 of the depth
\*Measurement not accurate due to overbank flows

Table 6-20

## Discharge Measurement Summary

### ICM 0.9

	Time	red, q	Hrs		2.25	1.25	1.28	2.00	1.16	1.05	2.20	1.00	1.33	1.00	0.75	1.75	1.00	0.83	1.50	1.08	0.67	1.50
Gage	Ht.	Change	Ft.		07	+.04	+.10	17	0	01	16	02	05	+.02	+.04	+.32	+.02	02	+.02	02	0	c1
No.	Meas.	Sec-	Lions		23	17	17	33	18	17	17	17	17	17	17	17	17	17	17	11	13	17
			Method																			
		Flow	cfs		478	486	-434	890	909	272	495	219	265	474	454	410	179	245	174	72	278	166
	Gage	Height	Ft		555.06	556.22	557.57	558.49	557.91	557.16	556.61	556.17	555.90	553.85	554.14	555.66	556.41	556.61	556.54	556.58	556.47	556.16
	Mean	Velocity	fps		. 29	.23	.23	.40	. 25	.15	62.	.14	.16	.42	.36	.24	.12	.15	.10	.04	.17	.10
		Arca	Sq Ft		1636	2093	1850	1940	2006	1767	1712	1596	1620	1126	1266	1691	1548	1588	1734	1672	1664	1684
		Width	Ft	•	208	153	155	<b>16</b> 0	157	155	155	155	155	160	170	155	155	155	155	155	155	156
			Made By		CEJ	L,A,B	L,N,B	I-G	H-M	L-S	Ľ-Z	L-N	H-N	GM-DN	CM-DN	N-E	3-8 0-10	<b>۳</b>	<b>L-</b> G	J-G	J-G	L-J
			Тіте	•	1445	1320	1000	1230	1040	1135	1315	1150	1300	0350	1445	1145	0840	0800	1430	0740	1400	1000
			Date	1979	<b>9-</b> 2*	9-28	9-29	9-30	10-1	10-2	10-3	10-4	10-5	11-24	11-24	11-26	11-27	11-28	11-28	11-29	11-29	11-30
			Š			-	7	٣	4	S	9	7	œ	10	11	12	13	14	15	16	17	18

Table 6-20 (continued)
Discharge Measurement Summary

ICM 0.9

T.	red'd	Hrs		1.3	1.2	1.2	1.0	1.3	5.0	1.8	1.0	.78	1.5	1.15	5.0	1.08	1.25	1.33	1.58	1.22	1.33		1.17	1.17	1.50
Gage	Change	Ft.		+.07	+.06	+.05	+.06	+.03	+.05	+.02	0	+.02	+.12	+.14	+.27	+.08	0	+.15		11			07	05	02
No.	Sec-	tions		17	17	17	17	17	18	18	18	18	16	17	16	16	16	16	19	16	16	16	11	17	17
		Method		œ	m	æ	æ	Ø	മ	æ	œ	ø,											Ω	æ	ပ
	Flow	cfs		409	468	<b>26</b> 9	584	199	198	211	543	274	935	1609	1532	806	862	1640	981	3829	3285	2734	1817	1402	295
Sauc Oauc	Height	Ft		554.76	554.86	554.96	555.09	555.02	555.88	555.97	556.06	556.10	554.26	555.67	556.76	557.56	557.80	558.52	565.13	567.05			559.60	559.52	557.35
Mean	Velocity	fps		.31	.35	.42	.43	.48	.13	.13	. 28	.17	.85	1.14	.92	. 58	.55	.78	.33	1.13	1.11	1.14	.83	.68	.16
	Arca	Sq Ft		1318	1334	1341	1354	1386	1559	1571	1916	1640	1096	1407	1665	1567	1755	2098	2979	3379	2961	2405	2196	2058	1828
	Width	F		155	155	155	155	155	157	157	170	155	145	155	150	150	150	150	180	185	155	150	170	155	155
		Made By		7 <b>-</b> ₹	M-L	M-L	34-L	OEM	N-E	N-E	L-M	L-M	DEM, SLC	DEM, SLC	DEM, SIC	DEM, SLC	M-C	C-B	OEM, SLC	J-G	<b>9</b> -6	C-B	<b>U-</b> 5	Q-0	ပု-ပ
		Time		1830	2220	0130	0540	1105	1045	1510	1030	1530	1200	0000	1230	0002	1230	1230	1040	0360	1050	1010	0945	1010	0945
		Date	1980	1-22	1-22	1-23	1-23	1-23	1-24	1-24	1-25	1-25	3-17	3-18	3-18	3-19	3-19	3-20	3-22	3-23	3-24	3-26	3-28	3-31	4-3
		ږ او		13	20	21	22	23	24	25	<b>7</b> 6	27	78	53	20	31	32	33	34	35	36	37	38	33	40

A - measured at .5 of the depth
B - measured at .2, .6 and .8 of the depth
C - measured at .2 and .8 of the depth
\*Measurement made at ICM 1.7

Table 6-21

Discharge Measurement Summary

### Indian Creek at Martin Road

Time req'd Hrs		.75	.45	.80	.67	1.00	.50	
Gage Ht. Change Ft.		0	+.02	+.02	0	10	0	02
Ho. Meas. Sections		15	20	56	20	20	24	22
Method		Ø	K	œ	æ	æ	æ	æ
Flow		20	23	111	37	237	73	456
Gage Height Ft		558.47	558.55	559.95	558.82	561.22	559.48	562.50
Mean Velocity fps		.42	.42	1.25	.64	1.40	1.14	1.62
Arca Sq Ft		47	54	89	28	170	64	281
Width Ft		28	30	52	28	99	49	79
Made By		MDH	WDH	нам	WDH	CEJ	JRL-CEJ	CEJ-HS
Time								0025
Date	1979	7-13	7-20	7-26	9-7	9-1	9-3	11-23
9		~	C1	m	••	'n	ø	۲-

A - measured at .6 of the depth

B - measured at .2, .6, and .8 of the depth

**TABLE** 6-22

DDTR - SEDIMENT CONCENTRATION ANALYSES
HSB AT PATTON ROAD
STORMS 5-7

Date-Time	Sample Type*	Se >>63.1	äiment G.F.* m	Sediment Analyses   G.F.* <.45;*   mg/l	es Total	\$ Vc >63μ	olatile G.F.	% Volatile Solids 31 G.F. Weighted Total*	DDTR Analyses (<63; cnly) Suspended Dissolved Tot ug/l ug/l ug/	ses (<63, Dissolved µg/1	only) i Total µg/l	Flow cis
Storm 5												
1/18-0900	υ	22	120	1~	149	46		28	040	.1822	.1862	388
2215	υ	9.9	42	<1	50	3.5	13	17	038	.2440	.2478	713
Storm 6												
1/22-1745	U	11	84	7	102	21	15	16	;	.1219	;	895
	9.	15	78	9	66	56	14	16				
1/23-0145	U	7	51	7	65	23	10	11	.0210	.1523	.1732	1176
	.60	٢	45	7	59	26	6	11				
0745	Ų	4	37	9	47	21	σ	10	010	.0311	.0321	944
	<u>.6</u>	٣	34	7	44	53	6	10				
1/24-0815	υ	4	17	7	22	33	7	12	00	.0513	.0522	614
	<b>.</b> 60	7	16	7	20	37	S	80				
1055	U	9	16	₽	23	21	9	10	900	.0412	.0418	612
1/25-0755	υ	m	20	7	25	34	9	Ø	00	.0513	.05-,22	529
	.ep	9	17	7	25	36	9	13				
1310	υ	4	16	~	21	36	9	10	007	.0311	.03~.18	489
	<b>.6</b> D	₹	15	<b>~</b> 1	17	22	σ	10				
Storm 7												
3/17-1130	υ	12	180	56	218	98	22	26	.2065	.0411	.2476	1725
	65	15	150	}		39	i					
1330	U	102	120	23	245	88	19	48	.0519	.0109	.0628	2114
	.6D	10	110	1		21	ł					
1445	υ	16	95	14	122	41	18	21	015	.0210	.0225	1788
	.65	7	98	1		32	;					

**TABLE** 6-22

DDTR - SEDIMENT CONCENTRATION ANALYSES
HSB AT PATTON ROAD
STORMS 5-7

Date-Time	Sample Type*	s >63μ	ediment G.F.*	Sediment Analyses G.F.* <.45µ* ' mg/l	Total	♣ Vc >63µ	olatile G.F.	<pre>* Volatile Solids 3µ G.F. Weighted Total*</pre>	DDTR Analyses (<63µ only) Suspended Dissolved Tot µg/l µg/l ug/	ses (<63µ o Dissolved µg/l	only) d Total µg/l	Flow cfs
Storm 7 (continued)	ontinued)				<u> </u>							
3/17-1715	U	10	89	59	128	15	15	15	026	.0109	.0135	2348
	<b>.</b> 6	13	72	;		28	;					
2140	U	4	73	18	98	23	16	18	019	.0109	.0128	2468
	œ.	2	20	1		12	1					
3/18-1235	U	٣	20	14	29	27	10	11	013	.0109	.0122	1051
	<b>.6</b> D	٣	47	1		59	1					
1720	O	٣	48	œ	29	53	11	13	025	.0210	.0135	1404
0-	œ.	₹	39	;		;	!					
3/19-0920	U	4	32	7	38	<b>5</b> 6	10	12	018	.0209	.0227	1030
	.6D	₹	53	!		;	!					
1715	U	٦	23	-	25	51	10	12	012	.0210	.0222	842
	·6D	7	30	}		32	;					
3/20-1140	U	7	220	35	262	18	31	31				;
	.6D	5	210	ļ		16	;					
1705	Ü	16	160	42	218	73	21	25	0-1.34	.0210	.02-1.44	1
	6D	19	160	1		19	;					
3/21-0945	υ	٢	110	64	175	1	15	15	022	.0109	.0131	2073
	<b>.6</b> D	-	120	;		41	;					
3/22-1050	ပ	m	41	22	99	14	15	15			.03-1.51	-84
	.ep	7	48	1		7	;					
3/24-1445	ပ	<b>.</b>	59	14	44	;	15	15	011	.0210	.0221	2442
	9.	4	28	1		ł	;					
3/26-1405	υ	4	100	36	140	7	21	21	0-1.41	.0310		1672
	.6D	m	83	1		21	!					
3/28-1325	υ	14	56	10	20	7	6	80	018	.0311	.0329	2101
	œ.	18	29	1		13	:					

**TABLE 6-22** 

DDTR - SEDIMENT CONCENTRATION ANALYSES
HSB AT PATTON ROAD
STORMS 5-7

Flow ofs		685		375	
Total Lg/l		0842		0239	
DDTR Analyses (<63u only) Suspended Dissolved Total ug/1 ug/1		.0814 .3842		.0210 .0239	
DDTR Analy Suspended 19/1		028		029	
% Volatile Solids >63µ G.F. Weighted Total*		11		6	
olatile G.F.		ω	ł	ω	ł
s √ >63μ		34	22	56	15
Total		40		25	
Sediment Analyses J G.F.* <.45.* Total mg/l		12	;	٣	1
ediment G.F.*		23	30	20	18
s >63µ		ß	11	7	7
Sample Type*	ontinued)	υ	.ep	υ	.eD
Cate-Time	Storm 7 (continued)	3/31/1455		4/3-1300	

\*NOTES:

C - composite of samples at all depths taken across the transect
.6D - composite of samples taken at .6 of the depth taken across the transect
G.F. - nonfilterable residue passing a 63 $\mu$  sieve but retained on a glass filter pad
.45 $\mu$  - nonfilterable residue passing a glass filter pad but retained on a .45 $\mu$  membrane filter
Total % volatile solids calculated assuming same % volatile solids for the <.45 $\mu$  fraction as for the G.F. fraction

**TABLE** 6-23

# DDTR - SEDIMENT CONCENTRATION ANALYSES HSBM 2.4 STORMS 5-7

Storm 5	l	^63µ	G.F.*	>63µ G.F.* <.45µ* : mg/l	Total	>63µ	G.F.	3µ G.F. Weighted Total*	Suspended Dissolved Tot ug/l	Dissolved ug/l	Total µg/l	Flow cfs	Flow cfs
												The Barre	19501
1/18-1200	U	8.5	130	9	144	9.6	<b>56</b>	25	13.26	3.24	16.50	483	474
1600	U	6.4	91	٣	100	99	23	<u>2</u> 6	10.87	3.22	13.59	687	483
2100	U	9.1	80	4	93	87	22	28	2.44	3.49	5,93	787	446
2400	υ	5.1	89	4	77	35	19	20	5.36	2.83	8.19	777	434
1/19-0200	U	4.9	89	4	77	80	19	23	6.26	3.06	9.32	774	428
1500	υ	2.4	20	7	53	23	18	20	5.25	2.82	8.07	260	389
Storm 6													
1/22-2100	ပ	М	49	т	55	25	13	14	4.44	.93	5.37	611	384
	.6D	7	51	7	<b>2</b> 2	28	11	12					
2400	ပ	13	25	4	69	7.5	12	11	6.46	06.	7.36	735	402
	<b>.6</b> D	٣	57	4	64	24	11	12					
1/23-0405	υ	m	54	6	99	25	11	12	2.88	1.05	3.93	827	411
	<b>.</b> θ	m	25	80	63	27	11	12					
0200	υ	7	49	13	64	23	10	10	3.06	1.26	4.32	904	409
	6D	7	48	œ	58	25	10	10					
1100	υ	m	44	7	54	19	11	11	1.92	.6466	1.90-1.92	2 923	398
	<b>д</b> 9.	ო	40	7	50	24	œ	σ					
1/24-0903	U	ţ	23	7	56	21	14	14	1.06	.3237	1.38-1.43	3 595	325
	.eb	<b>.</b>	24	4	29	65	7	6					
1460	U	<u>^</u>	22	H	24	34	œ	6	.68	.3843	1.06-1.11 530	1 530	313
	.ep	₹	20	7	23	69	7	10					

TABLE 6-23

DDTR - SEDIMENT CONCENTRATION ANALYSES HSBM 2.4 STORMS 5-7

Storm 6 (continued)	7000	*. 	3.5. × 4.3.0	Total	>635	ι. (5	3u G.F. Weighted	Suspended Dissolved To	Dissolved	Jun. i Total	Flow cfs	.0
tinued)		E	mg/:		i		Total *	: (bn	ug/1	1, gr.	Measured	WO Se
c												
)	7	23	2	27	8.0	7	r~	1.21	1.46	2.57	397	
<b>.</b>	<1	20	⊽	22	56	ın	(Q	i !	)	) •	· )	•
U	<u>^</u>	20	<b>-</b> -1	22	13	7	7	1.10	.7476	1.84-1.84	390	
œ.	۲×	20	C1	23	38	9	7					
U	00	79	11	98	i D	16	18	6.12-6.17	1.67	7.79-7.84	1186	! ;~! ` <b>!</b>
.ep	9	74			30							
U	9	74	13	93	54	16	18	4.41-4.46	1.59	6.0-6.05	1300	4
.6D	Ŋ	92			51							
υ	2	84	16	105	47	18	19	3.3-3.35	1.37	4.67-4.72	1533	230
.ep	٣	84			24							
U	9	85	28	119	33	16	17	2.04-2.09	.97	3.01-3.06	1724	737
·6D	2	80			69			•				
U	7	80	24	106	54	16	16	2.07-2.12	1.01	3.08-3.13	1900	860
.ep	7	98			22							
U	7	84	17	103	56	16	16	1.62-1.67	.95	2.57-2.62	1988	895
<b>.6</b> D	13	71			87							
υ	m	82	19	104	30	15	15	2.81-2.86	.86	3.67-3.72	1980	945
.60	7	80			56							
U	80	72	20	100	81	15	20	2.62-2.67	1.01	3.63-3.68	1981	974
.ep	۲,	29			1							
U	12	64	21	97	21	15	16	2.08-2.13	.92	3.0-3.05	1900	964
œ.	22	64			25							

TABLE 6-23
DCTR - SEDIMENT CONCENTRATION ANALYSES
HSBM 2.4
STORMS 5-7

Date-Time	Sample Type*	√63μ	Sedimen G.F.*	Sediment Analyses G.F.* <.45p* '	es	πε9<	olatile G.F.	% Volatile Solids 3µ G.F. Weighted	DDTR Analy Suspended	DDTR Analyses (<63µ only) Suspended Dissolved Tot	T e :	Flow cfs	
				mg/1				Total*	1/bn	1/61	1/61	Measured	Model
Storm 7 (continued)	ontinued)												
3/18-1000	ပ	ო	63	59	95	42	13	14	1.77-1.83	1.77-1.83 1.03-1.05	2.8-2.88	1825	406
	<b>.</b> 60	٣	9			23							
1120	υ	7	61	27	95	14	16	16	.96-1.01	.7274	1.68-1.75	1800	006
	.60	8	25			26							
1255	υ	7	26	18	9/	99	12	13	1.09-1.15	.6873	1.77-1.88	1760	890
	œ.	۲	26			;							
1530	υ	7	25	18	71	₽	12	12	.7479	.4954	1.23-1.33	1708	860
	.6D	۲	49			!							
3/18-1745	υ	10	46	16	72	56	10	12		.4547		1650	814
	<b>е</b> р	1>	25			!							
3/19-1000	ပ	<b>,</b>	37	7	45	;	17	17	1	;	;	1140	ļ
	<b>.6</b> D	7	39			7							
1805	ပ	4	30	4	35	1	16	16	.9299	.5153	1.43-1.52	1100	331
	9.	7	31			30							
3/20-1005	v	7	27	٣	32	14	16	16	1.0-1.27	.4853	1.48-1.80	1036	579
	.6D	-	24			13							
1740	υ	<u>ئ</u>	24	4	29	!	14	14	.3134	.442	.7176	;	;
	<b>.6</b> D	۲>	27			;							
3/21-1030	U	m	95	21	146	٣	16	16		.24		3056	1
	<b>.6</b> D	H	110			38							
3/22-0900	U	~	9/	29	144	25	14	14	.1731	.2530	.4261	472	;
	<b>.</b>	∵	100			!							
3/23-1205	U	4	79	99	149	α	16	16	;	ł	;	1505	:
	<b>.6</b> D	7	84			σ							
3/24-1410	U	<b>.</b> 7	42	27	70	;	16	16	031	.222	.2053	2570	1
	<b>.</b> 6D	7	44			;							

TABLE 6-23

**X** 

DOTR - SEDIMENT CONCENTRATION ANALYSIS
HSBM 2.4
STORMS 5-7

74 Ψ 91 O 24		1		;		;		ł	
Measured Mode		2055		1601		1099		495	
DDTR Amalyses (<63m only) Suspended Dissolved Total ug/l ug/l		.6272		.8232		.5670		.5055 1.29-1.39	
DDIR Analyses (<63, only) Suspended Dissolved Tota H9/1 H9/1		.2934 .33~.38 .6272		.3540 .8232		.2833 .5670		.5055	
Suspended		.2934		.4752		.2837		.7984	
% Volatile Solids >63u G.F. Weignted Total*		1-		00		8		7	
Volatil G.F.		۲-		œ		00		9	
>63u		ł	20	ł	ł	!	18	14	20
ses Total		29		28		32		21	
Sediment Analyses [ G.F.* < 45.* Total		15		ø		13		7	
Sedine võju G.F.		24	32	27	21	18	18	17	15
πεον		20	7	₹	₹	∜	4	7	9
Sample Type*	ntinued)	U	. 6D	U	.6D	υ	6D	U	<b>.6</b> D
Date-Time	Storm 7 (continued)	3/26-1325		3/28-1345		3/31-1505		4/3-1135	

#### \*NOTES:

Total % volatile solids calculated assuming same % volatile solids for the <.45µ fraction as for the G.F. G.F. - nonfilterable residue passing a  $63\mu$  sieve but retained on a glass filter pad .45 $\mu$  - nonfilterable residue passing a glass filter pad but retained on a .45 $\mu$  membrane filter C - composite of samples at all depths taken across the transect  $\cdot 6D$  - composite of samples taken at .6 of the depth taken across the transect fraction

TABLE 6-24

DDTR - SEDIMENT CONCENTRATION ANALYSES ICM 4.6 STORMS 5-7

Date-Time	Sample Type*	s >63µ	ediment G.F.*	Sediment Analyses G.F.* <.45 "* "mg/l	Total	>63µ	% Volatile >63µ G.F.	* Volatile Solids 3µ G.F. Weighted Total*	DDTR Analyses (<63u only) Suspended Dissolved Tot ug/l ug/l ug/l	ses (<63u objected Dissolved pg/1	al 1	Flow cfs Measured	Model
Storm 5											-		
1/18-1500	υ	٣	110	2	118	65	24	25	4.77		. 78	625	688
2100	υ	3.7	84	œ	96	77	22	24	8.33		2.64	581	613
2300	υ	21	100	4	125	85	24	34	8.33		2.32	441	602
1/19-0200	υ	4.2	95	6	108	35	23	24	8.68	2.73	11.41	;	586
1600	υ	&	44	7	47	6	16	16	1.85-1.76		5.18-5.27	269	208
Storm 6													
1/22-2000	υ	4	25	m	59	65	80	10	1.27-1.28	1.42-1.45	5 2.69-2.73	773	787
	.ep	4	53	-	34	24	œ	10					
2400	ပ	₽	32	2	38	69	7	δ	1.77	.4853	2.25-2.30	1006	808
	.ep	6	42	m	54	10	σ	6					
1/23-0400	ပ	₹	44	4	49	37	10	10	2.21	1.57	3.78	1102	772
	.ep	₽	49	2	55	78	œ	6					
0040	ပ	₽	48	4	53	44	10	11	2.69	1.21	3.90	1203	732
	<b>.6</b> D	<b>∵</b>	48	4	53	95	ტ	10					
1100	υ	<b>7</b>	63	Ŋ	69	44	æ	80	2.51	1.56	4.07	1245	<b>611</b>
	6D	₹	21	9	58	67	œ	6					
1/24-1100	ပ	₹	26	4	31	98	9	80	. 58-, 59	1.16	1.74-1.75	728	497
	<b>.6</b> D	7	32	4	37	54	80	6					
1500	υ	۲	31	7	34	46	80	6	.5354	.2328	.7682	673	503
	.6D	70	80	4	104	6	σ	6					
1/25-1000	υ	<b>†</b>	57	7	9	36	9	9	.5354	1.12	1.65-1.66	632	488
	.ep	4	85	м	86	51	9	9					
1500	U	<b>^</b> 1	18	₽	20	82	Ŋ	6	.5455	.8688	1.40-1.43	260	489
	·6D	₽,	47	٣	51	18	7	7					

TABLE 6-24

DOTE - SEDIMENT CONCENTRATION ANALYSES

ICM 4.6

STOPMS 5-7

Date-Time	न्य विस्तात्ति । स्वतिस्ताति	n€9^	Se iin	ent Analyses .* <.45u* mg/l	so Total	26.8 2.00 V	% Volutile Sciida 3u G.F. Weighto Total*	Sering to de	DDTS Analy Suspended	DDTR Analyses (463m only) Suspended Dissolved Tot 1971 hg/l		10 m	
Storm 7												paringa.	9
3/17-1400	U	7	110		128	20	18	18	5.68-5.73	1.92	7.60-7.65	1416	1270
	.6D	80	110			18							
1730	U	10	130	17	157	22	20	20	2.21-2.26	6.41	8.62-8.67	1600	1381
	6D	11	120			20							
3/18-0155	O	2	100	33	138	17	17	17	3.13-3.18	1.69	4.82-4.87	2408	17:2
	<b>.6</b> D	m	100			24							
0715	υ	10	12C	76	156	19	11	12	10.46-10.52	2.45	12.91-12.97	7 2500	1740
7-	3	m	87			30							
1110	υ	<u>^</u>	89	22	91	1	15	15	2.01-2.06	.99-1.01	3.0-3.07	2584	1590
	<b>.</b> 6D	4	99			1							
1720	ပ	<b>^1</b>	53	24	78	1	14	14	.9197	1.09-1.11	2.0-2.08	2000	1320
	œ.	7	20			{							
3/19-0055	ပ	<b>~</b>	49	15	65	{	12	12	1.02	1.58	2.60	1398	1030
	<b>.</b> 6	<u>^</u>	46			{							
0645	U	22	40	15	77	√	18	13	.7076	.67	1.37-1.43	1300	930
	бр	84	39			4							
1305	ပ	21	41	11	73	٦	16	12	.5054	.8385	1.33-1.39	1212	750
	œ.	88	40			œ							
1835	ပ	21	37	10	89	-	17	12	i	!		1150	650
	.ep	86	38			ث							
3/20-0140	U	19	30	1	49	m	15	10	1	;	;	1045	710
	.ep	120	32			٣							
0630	ပ	23	31	10	64	~	16	11	.1324	.50	.6374	1	850
	.60	120	27			{							

TABLE 6-24

DDTP - SEDIMENT CONCENTRATION ANALYSES ICM 4.6 STORMS 5-7

	Sample		Secimer	Sediment Analyses	ses	> •	olatile	* Volatile Solids	DDTR Anal	DDTR Analyses (<63p only)	only)		
Date-Time	Type*	^63µ	>63µ G.F.*	* <.45 **	Total	26 3 tr	>63u G.F.	Weighted Total*	Suspended ug/l	: Dissolved ug/l	ed Total ug/l	Flow cfs Measured Model	Model
Storm 7 (continued)	ntinued)											ļ ļ	
1/20-1415	ပင့်	2 98	24	۲>	30	æ <b>-</b>	16	15	.5561	.4954	1.04-1.15	1935	;
1840	, v (	3 ₵ ~	5 5 5	7	25	1 1 6	15	15.	.3239	.4042	.7281	;	;
3/21-0800	908	1	1	;	;	6 !	;	;	;	:	ł	3215	;
3/23-0955		, m ;	78	55	136	۳ ا	15	15	1	į i	i	342	;
3/24-1110		√ -	63	ŀ	64	6	11	11	024	.0814	.0838	1392	1
3/26-1100	و. د و	ۍ ٦ ر <sub>۲</sub>	28 26	15	42	12	14	14	.0213	.2328	.2541	2453	;
3/28-1030		, ~ -	23 19	10	35	m ¤	7	7	.0520	.2631	.3151	2314	;
3/31-1230	, v (	, <u>^</u> _	23	œ	32	1 6	œ	ω	.1621	.3840	.5461	1656	;
4/3-1000		4 4 4	21 17	7	24	25	œ	σ	.6670	.4752	1.13-1.22	871	;

\*NOTES:

C - composite of samples at all depths taken across the transect

.6D - composite of samples taken at .6 of the depth taken across the transect

G.F. - nonfilterable residue passing a  $63\mu$  sieve but retained on a glass filter pad .45 $\mu$  - nonfilterable residue passing a glass filter pad but retained on a .45 $\mu$  membrane filter

Total % volatile solids calculated assuming same % volatile solids for the <.45µ fraction as for the G.F.

fraction

TABLE 6-25
DUTY - SECTION CONTINUENTION ANALYSES
ICH 0.9
STORMS S-7

Date-Tine	Samele Type*	3ξ ηξόζ	Sedimont :	c Amalyses <.45.* mg/!	s Total	\$ 1.0 \$ 63.		Voluntie Solid: G.C. Weignted Total*	Suspended 19	Noalyses (<63 ndea Dissolved 1 ud/l		Flow ofs Measured	74 9 9 0 ₹1
Storm 5													
1/18-1500	U	4.	54	c i	50	7.1	18	19	1.54	1.52	3.06	;	683
2030	Q	٥.	44	(1	97	۲	17	18	1.26	2.60	3.86	;	582
2330	O	1.0	57	ж	61	28	18	18	.48	2.62	3.10	;	366
1/19-0200	Ų	۲.	63	5	69	61	20	20	2.20	2.39	4.59	;	ያ የ
1 <b>6</b> 00	U	ພາ	54	4	အ	53	18	18	1.70	1.58	3.28	!	<b>.</b>
S ET CT C													
0 111000													
1/22-1900	Ç	<b>1</b> >	28	7	1,0	64	ω	10	1.39-1.41	.775	2.09-2.16	409	716
	6D	ţ	30	<1	3.2	23	œ	တ					
2300	U	4	28	~	30	64	σ	11	56.	1.77	2.76	468	£91
	.60	₹	31	2	34	57	7	æ					
1/23-0200	U	4	53	^7	31	54	ω	6	.84~.86	1.69	2.53-2.55	<b>695</b>	753
	6D	7	23	٣	27	88	6	12					
0090	U	24	36	٣	41	35	6	13	.85	.995	1.75-1.80	285	206
	œ.	Ļ	35	7	38	75	10	12					
1200	U	₽	44	٣	48	21	10	10	1.06	1.17	2.23	661	623
	.6D	Ţ	41	4	46	26	σ	10					
1/24-1200	U	ţ	32	7	40	10	œ	œ	.51	.657	1.16-1.21	198	467
	9.	۲	33	5	39	69	6	10					
1700	U	√1	33	2	39	31	υï	7	.5657	.8792	1.43-1.49	211	905
	6D	<b>~</b> 1	32	4	37	53	80	6					
1/25-1100	ပ	<b>^</b> 1	30	2	36	24	7	7	.6061	.3641	.96-1.02	543	474
	œ.	<b>'</b> 1	24	4	29	84	œ	11					
1600	Ç	< <u>1</u>	25	٣	59	44	80	6	.4647	.3-,35	.7682	274	537
	. 6D	7	26	٣	30	71	œ	10					

-69-

X

TABLE 6-25

#### DDTR - SEDIMENT CONCENTRATION ANALYSES ICM 0.9 STORMS 5-7

Date-Time	Sample Type*	ς γ63μ	Sedimen. G.F.*	Sediment Analyses G.F.* <.45.* mg/l	res Total	* Vc	olatile G.F.	<pre>% Volatile Solids 3μ G.F. Weighted Total*</pre>	DDTR Analy Suspended ug/l	DDTR Analyses (<63w only) Suspended Dissolved Tot ug/l ug/l ug/l	al 1	Flow cfs Measured	Mođěl ,
Storm 7													
3/17-1215	υ	7	79	9	87	24	14	14	2.29-2.38	1.58	3.87-3.96	935	1033
	œ.	H	75			53							
1800	ပ	7	100	15	116	28	18	18	3.78-3.87	1.40	5.18-5.27	1280	1225
	<b>.6</b> D	7	92			23							
3/18-0005	ပ	S	160	22	187	23	23	23	7.32-7.42	2.19	9.51-9.61	1609	1488
	<b>.6</b> D	6	170			23							
0725	ပ	7	120	35	157	31	18	18	5.26-5.34	1.70	6.96-7.04	1560	1200
	6D	m	110			65							
1240	ပ	7	83	25	109	1	16	16	2.67-2.76	1.34	4.01-4.10	1532	1374
	<b>.</b> 60	7	87			;							
1800	υ	ч	64	28	93	;	14	14	1.29-1.38	1.15-1.17 2.44-2.55	2.44-2.55	1250	1175
	<b>.</b>	-	77			;							
3/19-0015	υ	1	55	22	78	;	12	12	.5567	. 99	1.54-1.66	806	939
	<b>.6</b> D	7	25			ł							
0640	U	7	25	19	72	;	14	14	.5661	. 66.	1.55-1.60	930	892
	<b>.6</b> D	-	5			1							
1300	ပ	7	44	16	61	1	11	11	1.95-2.07	. 92	2.87-2.99	362	742
	<b>.6</b> D	7	47			;							
1800	ပ	50	40	14	74	1	10	10	:	}	;	1	636
	<b>.</b> 6D	83	42			₽							
3/20-0125	υ	18	40	11	69	4	10	<b>6</b> 0	!	;	;	1	677
	<u>.6</u>	73	39			4							
0630	U	17	40	9	63	₹	17	13	.3843	.6671	1.04-1.14	:	700
	<b>.</b> 60	99	37			۲							
1250	υ	18	34	6	61	7	10	œ	.1718	.6873	.8591	1640	978
	<b>.</b> 6D	70	59			¢1							

TABLE 0-35

DETR - SECTIMENT CONTINUE ANALYSES

ICM 0.9
7-5 FIGURE STORIES

Flow cis Measured Model		:		981		3829		3285		2734		1817		1462		295	
only) d Total ug/1		.96-1.04		.4597		.92-1.14		.3953		.92-1.03				.87-1.06		1.61-1.73	
Corr Analyses (463, only) Suspended Dissolved Tot 19/1 ug/1		.6466		.2126		.2328		.2227		.5052				.2134		.3641	
		.3238		.2471		.6986		.1726		.4251		.0307		.6672		1.25-1.32	
3. 10121114 301148 3. 3.1 . Weignted Total*		12		11		13		12		17		16		σ		6	
		10		11		13		12		17		16		6		œ	
×63.		89	75	1	;	11	36	!	;	1	<b>^</b> 1	1	;	18	71	16	ŗ
ses Total		34		86		75		95		72		33		47		33	
Sediment Analyses G.F.* < 450* '		ın		2.7		15		37		33		Ŋ		13		∵	
0 0 0 0 0 0		28	53	58	63	58	ون	57	28	38	35	25	23	33	39	56	,
s 1894		1	C1	∵	V	CI	٣	₹	7	<u>^</u>	-	₽	₽	H	3	9	_
Sample Type*	tinued)	O	·6D	(·	6D	U	9.	U	.60	U	6D	U	9.	U	œ.	U	4
Jate-Time	Storm 7 (continued)	1710		3/22-1100		3/23-0950		3, 24-1120		3/26-1045		3/28-1000		3/31-1035		4/3-1005	

#### \*NOTES:

C - composite of samples at all depths taken across the transect
.6D - composite of samples taken at .6 of the depth taken across the transect
G.F. - nonfilterable residue passing a 63 $\mu$  sieve but retained on a glass filter pad
.45 $\mu$  - nonfilterable residue passing a glass filter pad but retained on a .45 $\mu$  membrane filter
Total % volatile solids calculated assuming same % volatile solids for the <.45 $\mu$  fraction as for the G.F. fraction

Table 6-26

#### Bed Sediment Data

1.7 DDTR conc. ug/g	ı	,	6.52	25.6
ICM 1.7 Sample DDTR wt. conc. 9 ug/9	•	ı	10.50*	22.0*
4.6 DDTR conc. µg/g	56.9 56.7	257.0	259	125
ICM 4.6 Sample DDTR wt. conc. g ug/g	2.71*	20.8 <b>64.</b> 5	7.49	138
2.4 DDTR conc. µg/g	8.69	1377	772	536
HSBM 2.4 Sample DDTR wt. conc. g µg/g	22.9	14.9	12.9	6.58
tton Rd. DDTR conc. ug/g	ı	7.17	25.7	6.62
HSB at Patton Rd. Sample DDTR wt. conc. 9 ug/9	ı	12.94*	0.29	6.35
Duration of Sampling hr.	72	82	189	160
Storm Ti <b>me</b> (Date) Sampled	1015(8/26/79)- 1015(8/29/79)	0030(9/2/79)- 1030(9/5/79)	1700(9/27/79)- 1400(10/5/79)	1900(11/23/79)- 1100(11/30/79)
Storm	-	7	m	4

\*Sampler had 4" x 4" orifice; all other samples taken with samplers having a 3" x 3" opening

the site itself or from the nearby landfills. Table 6-27 summarizes the results of these special grab samples. The spring pool at HSBM 4.9 listed in Table 6-27 is also identified in the listing of the data in the Appendix as a "goldfish pond." The "sulphur spring" listed in the appendix is on the right bank at approximately HSBM 4.85. This spring was inundated at higher flows.

Table 6-27
Special Samples

Date	Location	DDTR(µg/1)
8/28/79	Newly cut ditch that drains new landfill	.2044
8/28	Untreated water in new DDT ditch above Activated Carbon Treatment (ACT) plant	12.1
8/28	Treated water from new DDT ditch (below ACT plant)	.8395
8/28	Seep near groundwater well RS-024	.1349
8/28	Spring pool on right bank near HSBM 4.9	2.55
9/1	Drain east of new DDT ditch (water)	.3551
9/1	Drain east of new DDT ditch (water and bottom sediments)	.0642
9/1	Right bank at HSBM 5.13 just upstream of beaver dam and trash backup	040
10/4	Seep near ground water well RS-024	0-1.2
10/4	Spring pool on right bank near HSBM 4.9	0-1.8

APPENDIX

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION MUNISVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHERLER RESERVOIR, ALABAMA

The same of the sa

1ASKO - ASSESSMENT OF ODT FRANSPORT - HYDROLOGIC AND SEDIMENT DATA SAMPLING AND COMPOSITING VARIABLLITY STUDY OF DOT CONCENTRATIONS MEASURED IN RUNDEF

		<b>₹</b> 57	\$ T1 &	SAMPLING AND COMPO	OSITING	VAR 14	BILITY STUDY	UF 09T (	CONCENTRATIONS	7	EA SURED	IN RUNOFF		101	9 400
7		541		MUKIZUNTAL	DEPTH	. AR I	SUSPENDED	DOT-0.P	9. 4-TOO	0.00-000	0.00	0.0F-0.0	0.0 - P.D	AL NI MINE	MAKINUM
JATE-1142		DATE-TIM	<u>.</u> ,	ľ			SOLTOS-M6/L	( 1/9n )	(1/90)	(1/90)	(1/30)	(1/90)	(16/1)	(1/90)	(1/90)
•		4 UG 7 9	4	LEFT	-	6-037	•	0.30	1.20	000	٥,	0.62	1.36	•	15.43
26AUG19 1	427 75#	26AUG79	7 69 7	Liff	. 4	6-038	•	0.32	1.99	3.75	5 .62	0.68	1.22	13.58	13.58
-	433 26A	2 95 492	1437	LEFT	٣	4-034	•	0.31	060	3.78	7	0.62	1.22		12.04
-		2643679	**		,	9	•	0.30	1.08	41.4	96. 5	29.0	1.29	13,39	13.39
~		26AUG74	1423	*100LE	~	6-041	•	0.29	1.05	3.82	5 .84	0.57	1 •24	•	12.81
		20A UG 75	1426		~	47-9	•	0.34	1.17	4.25	6 <b>0</b> 0 5	9.0	1.30	•	13.76
-		2640679	1+59		m	6-0+3	•	0.33	1.0	3.56	5.18	0 4 3	1.18	7	12.28
26AUG79 1		26 A U.E 70	1502		3	440-9	•	0.33	1.13	3.56	66.4	0.62	1.11	۲.	11.74
		26AUG79	1.05	RIGHT	~	6-045	•	0.32	0.95	4.06	5 •55	0.63	1.26		12.77
~	-	264 UG 79	80°. 1	R1GHT	7	9+()-9	•	0.29	69.0	3.56	۶ • 00	0.58	1 200	11.12	11-12
7		26AUG70	1511	R IGHT	٣	6-6-47	•	0.32	0.73	4.52	6.72	69.0	1.82	14.76	14.76
	1915 261	26AUG 79	4 21 5	k]C11	4	840-9	•	0.33	1.04	4.72	3.0	69.0	1.51	14.93	14.93
_		26A JG 79	1#1	RICHI	7	40-0	•	0.34	08.0	4.32	6.22	69.0	1.48	13.84	13.84
_		2 hA UG 79	4		7	6-050	•	0.32	0.93	4.25	6.25	0.65	1.51	13.91	13.91
26AUG79 1	447 744	26.AUG79	1451	R IGHT	~	6-051	•	0.29	0.63	4.10	5.90	0.54	1.3%	12.65	12.85
25 AUG79 1		264 UG 74	1457		~	520-9	•	0.32	1 .00	4.26	5.84	0.59	1.40	13.41	13.41
6	458 264	26AUG 79	1563	RIGHT	7	6-053	•	C.31	1.09	3.89	5 .60	75.0	1.28	12.70	12.76
25AUG79 1		26A UG 79	1 50 4		7	6-054	•	6.29	8	3.62	5 32	0.56	1.21	11.66	11.68
_		26AUG79	1514		rų.	6-055	•	0.32	98.0	3.47	4.73	0.66	1.02	11.04	11.04
		26AUG79	1739	COMPOSIT		450-9	50.0	0.28	3.15	4.12	08.9	0.65	1.42	16.42	16.42
		26AUG 79	1747	COMPOSITE	•	9-040	50.0	0.28	1.71	3.68	5.83	0.62	1.33	13.45	13.45
26AUG79 1		26AUG79	1754	COMPOSIT	•	6-061	51.0	0.31	2 • 8 3	3.62	5.78	0.63	1.20	14.37	14.37
		26A UG 79	1801		•	9-005	51.0	0.29	2 06 4	3.71	6.05	3.0	1.27	14.60	14-60
		26AUG79	1808	COMPOSIT	•	6-063	50.0	0.32	2.20	3.96	44.0	690	1.29	14.90	J <b>6- 1</b>
		26AUG 79	1612	COMPOSIT	•	\$-00	51.0	0.28	2.54	3.70	6.18	0.59	1.19	14.48	14.48
		25EP79	•		-	6-143	•	60.0	7	1.27	2.14	0.19	0.46	2.26	5.26
	2122 25	£613	•	LEFT	2	6-144	•	0.12	•	1.49	3 .07	0.24	0.58	7.48	•
		2SEP79	•	LEFT	٣	6-145	•	0.17	~	1.67	3.99	0.26	0.62	7.96	ě
		\$EP79	•	LEFT	4	9-1-9	•	01.0	8	1.40	2.29	0.22	0.55	6.22	N
		2SEP79	•	#100LE	~	6-147	•	0.13	~	1.43	2 • 0 2	0.23	0.57	5.2	Γ.
		25 EP 79	•	MIDOLE	7	6-148	•	0.15	80	1.68	2.73	0.26	0.63	7.29	N
		25EP79	•	MIDDLE	m	6-146	•	0.11	*	1.45	3 -60	0.23	0.57	\$. \$	٠
		2SEP79	•	MIDULE	4	6-150	•	0.14	٠.	1.44	2 .94	0.21	0.50	6.77	~
		25EP 79	•	R IGHT	~	6-151	•	0.12	9	1.46	3.08	0.21	0.52	7.42	•
		2SEP79	•	RIGHT	7	6-152	•	0.10	٩	1.28	2.18	0-19	94.0	5.13	-
	2258 25	25EP 79	•	R 1GHT	w	6-153	•	0.10	۲.	1.38	3 002	0.20	74.0	5.90	Ġ.
			•	R IGHT	4	6-154	•	0.12	٩	1.54	2.97	0.24	0.57	6.49	•
	•		1527		-	6-238	•	0	o	0.59	60.0	60.0	0.50	1.17	•
			1 52 1			6-238	•	0	ð	0.55	0.79	0.09	0.18	1.70	•
			1527	R IGHT	-	9-540	•	0	7	0.82	1 200	0.14	0.30	3.22	M,
			1 527	LEFT	7	6-241	•	0	?	09.0	<b>96°</b> 0	010	0	2.13	Ņ١
_	_		1527	MIDOLE	ſIJ	6-242	•	0	7	0.61	0.93	0.10	0.21	8.	ó.
_			1527	RIGHT	7	6-243	•	0	Ų,	0.05	1.70	0.17	0.37	3.55	Ō.
~	~		1 52 7	LEFT	•	9-244	•	0	7	0.59	0	0.09	0-19	1.98	Q.
	•		1527	MIDDLE	٣	6-245	•	0	~	0.65	96.0	0.10	0.20	2.18	Ņ
			127	RIGHT	m	9-2-9	•	0.08	0.13	0.72	1 .95	0.11	0.23	2.24	2.32
-	_		1521	LEFT	4	6-247	•	0	9	0.62	0.91	0-10	0.22	 	Õ.
_	510 10		1527	MIDOLE	*	6-248	•	0	9	0.62	16.0	60.0	0.21	1.03	Ġ,
179 1	•	10C179	1221	R IGHT	*	6-548	•	0	8	0.59	0.84	0.08	0.18	1.69	€

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

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TASK 6 - ASSESSMENT OF DDT TRANSPORT - HYDROLDGIC AND SEDIMENT DATA SAMPLING AND COMPOSITING VARIABILITY STUDY OF DDT CONCENTRATIONS MEASURED IN RUNDFF

MINIMUM MAXIMUM (UG/L) HORIZONTAL DEPTH LABIO SUSPENDED DDT-0,P DDT-P,P DDD-0,P DDD-0,P DDE-0,P DDE-P,P LOCATION SOLIDS-MG/L (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) ENDING DATE-TIME RAIN BEGINNING EVENT DATE-TIME

FOUTNOTES: A. THE ABOVE DATA WERE COLLECTED AT HUNTSVILLE SPRING BRANCH MILE 2.4, DODD ROAD. B. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. C. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

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ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HONISVILLE SPRING LRANCH, INDIAN CREEK, AND ADJACENI LAND<sup>6</sup> AND MATERS WHEELER RESERVOIR, ALABAMA

TASKO - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

DDTR MAXI HUM (UG/G)	69.80 1377.00 276.78 535.85	7.17 25.72 6.62	6.52	259.15	257.24	200 • 26	56.91	56.72
HINIMUM (UG/G)	69.80 1377.00 276.78 535.85	7.17 25.72 6.62	6.52 25.04	259.15	257.24	200 - 26	56.91	56.72
NDS-UG/G DDE-P,P (UG/G)	8.00 105.00 25.80 28.70	0.71 3.72 0.98	0.58	14.00	37.60	22.40	6.95	9.81
CONCENTRATIONS OF DOT MEASURED IN BEDLOADS-UG/G DOT-O,P UST-P,P DOD-O,P DOD-P,P LOE-O,P DDE-P,P (UG/G) (UG/G) (UG/G) (UG/G) (UG/G) (UG/G)	3.05 42.10 7.73 8.10	0.49 1.67 1.03	6.23 2.59	3.82 5.55	18.80	8.8	2.85	2.42
ASURED I DDD-P,P (UG/G)	24.40 412.60 61.60 151.00	1.66 10.40 1.22	1.41 7.7	72.00	135.00	51.90	22.80	17.60
F DOT ME DDD-0.P (UG/G)	9.55 149.00 19.30 35.30	0 9 9 6 6 6 6	0°39 5°00	8.24	36.00	14.50	6. 6.	6.38
ATIONS OF TOTAL OF TO	22.40 628.00 156.00	2.64 2.43 2.32	3.73	153.00 53.80	26.30	104.00	14,90	22.60
CONCENTRATIONS OF DOT MEASURED IN BEDLOM DOT-0,P DOT-0,P DOD-0,P DOD-P,P LOE-0,P (UG/G) (UG/G) (UG/G) (UG/G)	2.40 40.30 6.35 7.75	3.04	n.18 0.52	8.04	3.54	1.56	0.71	0.91
HEIGHT OF Sample-(64)	22.90 14.90 12.90 6.58	2.90 0.29 6.35	10.50	7.49 13.82	NNEL 20.80	05.\$0	2-71	06*0
LA910	6-100 6-208 6-300 6-477	6-209 6-301 6-474	6-299	6-302	DF CHANNEL	6-211	#1 6-101	#2 6-102
HUPIZUNTAL LABID WEIGHT OF LOCATION SAMPLE-1G	0,000	JN RGAD		9	ID CENTER	ND A IGHT	ND SAMPLE	AD SAMPLE
	8	7. · · ·	• •	1E KOM	. KD.	ž.	* × × × × × × × × × × × × × × × × × × ×	VE RO
ending Date—Time	ANCH 2.4 -	ANCH 3.6 -	- TRI ANA 23NDV 79	- CENTERLIN 23NDV7	CENTERL IN	CENTERL IN	CENTERL IN 29A UG 79	CENTERL IN 29AUG 79
RAIN BEGINNING EVENT GATE-I INE	H-VILLE SP41NG BRANCH 2.4 - COCC ROA I 26AUG79 1310 29AUG79	H-VILLE SPRING BRANCH 3.6 - FATTON R 2	INDIAN CREEK 0.9 - TRIANA 3 4 23NOV7	INDIAN CREEK 4.6 - CENTERLINE ROAD 3 4 23NOV79 23NOV79	INDIAN CREEK 4.6 - CENTERLINE KOAD 2 5SEP79	INDIAN CREEK 4.6 - CENTERLINE KOAD 2 55EP79	INDIAN CREEK 4.6 - CENTERLINE MOAD 1 26 AUG79 1340 29AUG79 .	INDIAN CREEK 4.6 - CENTERLINE ROAD I 26AUG79 1350 29AUG79 .
RAIN EVELT	H-VILI 1 3	H-VILL 2 3	INDI AN	INDI AN	INDIAN 2	INDIAN 2	INDIAR	1 MO1 A

FOOTNOTES: A. THE ABOVE DATA WERE COLLECTED USING RELLEY-SMITH BEDLOAD SEDIMENT SAMPLERS. B. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. C. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CPLEK, AND ADJACENT LANDS AND MATERS WHEFLER RESERVOIR, ALABAMA

185K 6 - 855558ENT OF DDT FRANSPORT - HYDROLDGIC AND SEDIWENT DATA SAMELING AND COMPUSITING VARIABILITY STUDY OF OUT CONCENTRATIONS MEASURED IN RUNDEF

			7	ALCO ONE ON TO A		STAN OFFI	SILIIY JIJUY		נכשיבאואו	1	1 Jayor V				200
	RAIV	EEGINNING	F VL 146	MUK120NTA	30 1	PIH LARIU	SUSPENDED	DDT-3,P	PCT-P,P	9.C-000	0.0-0.0	4 D- 30C	4		MAXIMUM
	E VENT		DALE-TIM	E LUCATION				( DE/L)	(1/9n)	_	_	(1/90)	(1/90)	(1/90)	106/1)
		26 AUG79 1420	26AUG7			9	•	٤,	~	ବ	7.95	0.62	1.36	15.43	
	-	_			. 🕠	6-038	•	ψ,	٥.	3.75	5 •62	9.68	1.22	13.58	13.58
	4	••	1		~	4-034	•	٣,	٥.	۲.	5.12	0.62	1.22	12.04	9
	-	-	,1		4	٩	•	٤,	င္	4.14	5 .96	0.62	1.29	13.39	13.39
	<b>⊸</b> ,		14	_	~	6-041	•	٠,	Ç	8	5 +84	0.57	~	12.81	<b>ق</b> ا
	4	-4	~		rų.	240-9	•	ç	7	~	6 00 5	0.65	٠,	13.70	•
	<b></b>				m	6-043	•	٣.	1	Š	5.18	0.63	1 - 18	12.28	~
				Ī	4	340-9	•	~	~	3.56	66.4	0.62	~;	11.74	٠,
	4	~			~	6-0-45	•	4	ç.	4.06	5 .55	0.63	?	12.17	·-
		_		1.08 RISHT	2	9+0-9	•	۲.	ø	3.56	00	0.58	00°	11.12	7
	4	,-4			m	66.47	•		۲.	4.52	6.72	0.65	j.82	14.76	٠.
		6AUG79 1	~		*	240	•	۳,	့	4.72	40.0	0.69	1.51	14.93	•
	-	_			<b>~1</b>	9-042	•	ĸ,	æ	4.32	6 • 2 2	0.68	i •46	13.84	బ
	_	-			2	6-050	•	٩	٥,	4.25	62.9	0.65	1.51	13.91	٠.
	~4				2	4-051	•	۲,	ş	4.10	9.40	0.54	1.34	14.65	æ
	,-4	25AUG79 1452			N	0-052	•	~	্	4.26	5.84	0.59	1.40	13.41	4
	~=			1503 KIGHT	~	6-053	•	3	•	2.84	2 •60	0.54	1.28	12.70	۲.
	~				7	6-673	•	~	8	3.62	5 32	0.56	1.21	11.66	o
	-			E RIGHT	14	6-055	•	٣,	æ	3.47	4.73	0.66	1.02	11.04	٩.
_	~			9 COMPUSIT	•	440-9	50.	~	7	4.12	08.9	0.65	1 042	16.42	16.42
	-			-	•	6-060	20	~	۲.	3.68	5.83	0.62	1.33	13.45	13.45
			8 26AUG79	COMPOSIT	•	6-061		~	8	3.62	5.78	0.63	1.20	14.37	14.37
-				COMPOSIT	٠	6-6.62		~	9	3.11	90.0	\$	1.27	14.60	14.60
	-			COMPOS 11	•	6-063			~	3.96	44.0	690	1.29	14.90	14.90
	-		Ñ	1130	٠	440-9	51.	7	Š	3.70	6.18	0.59	1.19	14.48	14.48
_	7			· LEFT	~	6-143	•	0	7	1.27	2.14	0.19	0.46	5.26	4
	7				~	6-144	•	7	6	1.49	3 •07	0.24	0.58	7.48	7.48
	~	SE P7 9	2SE P7	. Leff	~	6-145	•	7	~	1.67	3 • 9 9	0.26	0.62	7.96	1.96
_	2	SEV79	2	. LEFT	1	9-1-9	•	7	8	1.40	2 20	0.22	0.55	6.22	6.22
	۲,	5E P79	13 2SFP79	. MIDDLE	-	6-147	•	7	3	1.43	2 • 02	0.23	0.57	5.73	5.15
	2	25EP79 223	3 2SEP79	. MIDDLE	~	9-1-9	•	~	8	1.68	2.73	0.26	0.63	7.24	7.25
_	7		~	. MIDOLE	6	6-146	•	7	4	1.45	3 060	0.23	15.0	2.40	7.40
	. 7		•	. MIGULE	4	047-9	•	7	3	1-44	2 • 94	0.21	0.50	6.77	6.77
	~	25EP79 2246		. RIGHT	-	6-151	•	7	Ç	1.46	3. <b>0</b> 8	0.21	0.52	7.42	7.42
_	~			. RIGHT	•	6-152	•	7	O,	1 -28	2.18	0.19	0.46	5.13	5.13
		SEP75		• RIGHT	~	6-153	•	7	7	1.38	3.02	0.20	74.0	5.96	5.46
	7	SEP79		•	4	9-1-9	•	•	•	1.54	2.97	0.24	0.57	6.0	£ .
_	·n		_			6-238	•	0	o	0.59	68.0	60.0	0 -20	1.77	1.93
	m -		,			6-539	•	0	୍ଦ	0.55	0.79	60.0	0.18	1.70	1.78
	· • •		-		-	9-5 40	•	0	J.	<b>~</b>	1 -00	0.14	0.30	3.22	9.90
_	σ,		10 CT 74		~	1 7 7 - 9	•	ပ	?	•	80°	0	070	2.13	1207
	m	10C 179 151C	10C179	25.4	e e	6-242	•	0	7	0.61	0.93	0.10	0.21	95.1	2.06
	٣		_		N	6-243	•	0	3	<u>~</u>	1.70	0.17	0.37	3.55	3.63
J	~		_	1527 1667	m	9-544	•	0	?	•	0.89	0.09	0.19	96-1	90°7
	· Դ :	_			m,	9-242	•	0	ç		96.0	0.10	0.20	2.18	2.26
	m,	-	·	~ 1	m ·	6-246	•	90.0	0	0.72	1 .05	0.11	0.23	2.24	2.32
.,	<b>•</b>	?:	1001	1441	1.	147-9	•	0 0	<b>9</b>	Λ,	160	01.0	77.0	CB - 1	1007
	٠,	1001/9 151	6/1301 01	1527 MIDDLE	\$	847-9	•	0 0	80°0 V	o.	3		0.71	£ 8.9	, d
	n			r	r	1536	•	5	3	Λ.	0.00	•	2		\ •

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WINTERS WAS AND ADJACENT LANDS AND WATERS

MININUM (UG/L) 001-0.P 001-P.P 000-0.P 000-P.P 00E-0.P 00E-P.P (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLDGIC AND SEDIMENT DATA SAMPLING AND COMPOSITING VARIABILITY STUDY OF DOT CONCENTRATIONS MEASURED IN RUNDFF HORIZONTAL DEPTH LABID SUSPENDED (LOCATION SOLIDS-MG/L ENDING DATE-TIME BEGINNING DATE-TIME

FOUTHOTES: A. THE ABOVE DATA WERE COLLECTED AT HUNTSVILLE SPRING BRANCH MILE 2.4, DODD ROAD. B. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERD. C. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

EVENT

MAXIMUM (UG/L)

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION MUNTSVILLE SPRING ERANGH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS. ALABAMA

TASKO - ASSESSMENT OF UDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

DDTR HAX1 HUH	69.80 1377.00 276.78 535.85	7.17 25.72 6.62	6.52	259.15 124.69	251.24	200 • 26	16.95	56.72
HINIHUM (UG/G)	69-80 1377-68 69-80 69-86	7.17 25.72 6.62	6.52	259.15 124.69	257.24	200 - 26	56.91	56.12
105-UG/G 20F-P.P 1 UG/G)	6.00 105.00 25.80 28.70	0.71 3.72 0.98	0.58 6.66	14.00	37.60	22.40	6.45	6.81
N BEDL'A LOE-O.P (UG/G)	3.05 42.70 7.73 8.10	0.49 1.67 1.03	6.23	3.82 5.55	18.80	8.8	2.85	2.42
ASUREC IN BEDLO DDD-P,P LDE-O,P IUG/G) (UG/G)	24.40 412.00 61.60 151.00	1.66	1.41	72.00 34.80	135.00	51.90	22.80	17.60
001 ME. 300-0+P ( 106/6)	9.55 149.00 19.30 35.30	0.88 6.46 0.93	0.39 5.00	8.24	36.00	14.50	8 6	6.38
ATIONS OF OCT MI UOT-P.P DOD-O.P (UG/G) (UG/G)	22.40 628.00 156.00 305.00	2.64	3.73	153.00 53.80	26.30	104.00	14.96	22.60
CONCENTRATIONS OF DOT MEASURED IN BEDLOADS-UG/G DOT-O,P DOT-P,P DOD-O,P DDD-P,P LOE-O,P DOF-P,P (UG/G) (UG/G) (UG/G) (UG/G) (UG/G)	2.40 40.30 6.35 7.75	0.79 3.04 0.14	0.18	8.0%	3.54	1.56	0.11	0.91
HUR IZUNTAL LABIS WEIGHT OF LOCATION SAMPLE-(G4)	22.90 14.90 12.90 6.58	2.90 0.29 6.35	\$0°27	7.49	20.8C	64.50	2.71	0 h " u
. LASTO 1	6-100 6-208 6-300 0-477	6-209 6-301 6-474	6-294	6-302	0F CHANNEL 6-210 2	6-211	*1 6-101	#2 6-102
RIZGNTAL CATION	O V T	RUAD			CENT ER	л IGH1	SAMPLE	SAMPLE #2
	აიან 2 ეგი		. •	NE KOAD	NE KOAD	VE KUAC	CAON PY	NE POAD
ENDING DATE-TIME	ANCH 2.4 - C 29AUG79	ANCH 5.6 -	- TRI ANA	- CENTERL II	- CENTERLI	- CENTERLI	- CFNTFRLT	- JENTERLT 3 29AUG 79
RAIN BEGINNING EVENT DATE-TIME	H-VILLE SPRING BRANCH 2.4 - 1	H-VILLE SPRING SRANCH 5.6 - FAITON 2	1NDIAN CREEK 0.9 - TRIANA 3 - 23NUV74 - 23NUV74	INDIAN CREEK 4.6 - CENTERLINE KOAD 3 23NCV74 23NDV79	INDIAN CREEK 4.6 - CENTERLINE KDAD	INDIAN CREEK 4.6 - CENTERLINE KUAD 2 55EP79	INDIAN CREEK 4.6 - CENTERLINE HOAD 1 26AUG79-1346-29AIRSP9 -	INDIAN CREEK6 - JENIFRLINE POAD 1 ZAAUG79 1350 29AUG79 .
R A IV	I ~ vo t	1 0 m 4	1.40]	1ND1	I MD	INCI	1401	I VOI

FUGINCTES:

A. THE ABGVE DATA WERE COLLECTED USING KELLEY-SMITH REDLMAD SEDIMENT SAMPLERS.

B. MINIMUM TOTAL DDIF CALCULATED BY SETTING ALL LESS THAN VALUES TO ZEMD.

C. MAXIMUM TOTAL DOTP CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

ENGINEERING AND ENVIRONMENTAL STUDY OF DDI CONTAMINATION HUVISVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS MHEELER RESERVUIR, ALABAMA

TASKO - ASSESSMENT OF DDT TRANSPORT - HYDRULUGIC AND SEDIMENT DATA

	00 TR	MAXIMUM	(797)
	101AL 00 TR	E AIRCE	(467L) (1) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L)
1790		900	(V6/L)
IN MATER		P 900	(J/S0)
EASURFO	TAL	9-4-00C	(729)
CONCENTRATIONS OF DDT MEASURED IN MATER (UG/L)	01	0.000	(1V 9D)
<b>FRATIONS</b>		9, 9-TOO 4	(16/1)
CONCEN		L DDT-0.1	( )\n
		V01-501	2
		SUS-SUL	(46/1)
		HURIZONTAL LABID SUS-SOL VOL-SOL DDT-0,P DDT-P,P DDD-0,P DDE-0,P DDE-0,P DDE-P,P MINIMUM MAXIMUM	LUCAT 10N
		END ING	DAIE-TIME
		PFCINNING	DATE-114E
		RAIN	EVENT

# ENGINEERING AND ENVIRONMENTAL STOUM OF DDI CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

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TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

				CONCENTRATIONS		OF DDT MEA	MEASURED IN	WATER	いなん)		
	RAIN BECINNING ENDING EVENT DATE-TIME DATE-TIME	HORIZONTAL LABID	LABID	001-0.P	001-P P	1000-016 000-6 106/L) (UG/L	٩.	00E-0,P	006 - P.P	MINIMUM (UGA)	MAXIMUM (UEA.)
-	M-VILLE SPRING BRANCH	NEW DITCH URA	URAINING LAND FILL 6-090	•	•	•	•	•	•	•	•
	H-VILLE SPRING BRANCH	NR GD WATER .	WELL RS-024 6-096	•	•	•	•	•	•	•	•
-	H-VILLE SPRING BRANCH	SPRING POOL C	ON RT BANK-MI 4.9 6-098	٠	•	•	•	•	•	•	•
-	H-VILLE SPRING BRANCH	TREATED MATER	. FRDM DOT OITCH 6-094	•	•	•	٠	•	•	•	•
-	H-VILLE SPRING BRANCH	UNTREATED WAT	ATER IN DDT UITCH 6-092	•	•	•		•	•	•	•
	•	3000									
	1 26AUG79 1C43 26AUG79 1	1112 COMPOSITE	6-033	0-140	0800	1.910	2.940	0.220	0.360	5.650	5.650
	1732 26AUG 79	CUMPO S 11	80-0	201	0.080	1.980	3.040	0.200	98	2690	5.70
	2043 26AUG79	C (MPDS 11	9-0-9	0.150	0.080	2.080	4.940	0.260	0.380	7.890	7.890
	1 27AUG79 1153 27AUG79 1	1216 COMPOSITE	6-066 1-046	0 - 180	000	1.960	3.490	0.280	0	044 0	9 6
	1622 28AUG79		6-072	130	08000	1 - E40	99	0,70	0.330	3	7.220
	1300 294 UG 79	COMPOSIT	6-074	.140	0	2.110	3.370	0.250	0.370	0-7-9	0.320
	2 SEPT9 315 25EP79	357 CUMPOSITE	6-139		0110	1.420	2.810	0.140	0.270	0	0,0
	100 355979		0-11-0	0.080	080	0.790	20.1	20.0	0.1.0	2 130	2-290
	930 35EP79	COMPOSIT	6-156	0	00000	0.830	1.140	0.110	0.250	2.360	2.520
	25EP79 1621 35EP79	1632 COMPOSITE	6-160	08000	08000	0.980	1.246	0-110	0.210	2.540	2.700
-	55EP79 1325 55EP79	COMPOSIT	6-164	0.00		1-640	2.660	9	0.310	02.00	
	275EP74 1450 275EP79	COMP 15 IT	6-2-4	•	0.000	1.210	2.220	0.120	0.210	3.860	3.940
	3 265LP79 458 295FP79	532 COMPOSITE	6-232	0.000	080.0	251.1	1.990	0.120	0.210	3.600	3.680
_	305FP79 1135 305FP74		5-2-4	080.0		0.280	3 5	001.0		1 5000	1.720
	201179 447 201179		6-285	< 0.080	0.000	0.700	0.830	0.120	0.180	1.830	066.1
	1030 3/10179		٨-28٦	< 0.000	08000	0.450	0.640	0.00	0.160	2.010	2.170
	3 40CT74 1530 40CT79 1	1550 CUMPOSITE	6-269	○ O P O P O P O P O P O P O P O P O P O	080.0	028-0	000	S .	2.0	2.180	2.340
	23NCV74 2245 23NGV79	COMPOSIT	6-436	001-0	0000	1.060	3.30	0-1-0	0.180	2.110	2-910
	24NCV79 1240 24NCV74		0-434	< 0.100	97.0	0.630	0.750	2	00100 >	1.380	1.760
	24NCV79 1900 24NDV74			< 0.100	< 0.100	09.0	0.78	۳.	0.150	1.410	1.610
	25N:VI 915 25N JV79	-	777	< 0.100	< 0.100	099	01.1	٦,	0.180	2.070	6.270
	64 AOAS 2	ALCO COMPOSITE		001.0	001.00	0.710	0,00	0.1.0	0.150	006-1	2.20
	245 270075	166 COMPOSITE	0 0 1 4 0 m	00100	81.3	0.510	9 9	001.0	001.00	1.330	06.2-1
	1407 2340V79		0-450	7		0.520	002.0	7	0.130	1.350	1.050
	- 24MINA 1000 29MINA -	10 4 COMPOSITE	r-45:	< 0.100	0.100	0.630	0.910		0.140	1.680	1.960

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNISVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATEWS WHEELER RESERVOIR, ALABAMA

#### TASKA - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

	2	BEGINNING	INC	END 1 MG		MGR120NTAL	TABIO		PDT-0-P		0.00-000	-01550t VE C	0.0F -0.P	000	MINIMUM	MAXIMUM
	EVENT		INE	DATE-TIME	¥	LOCAT 10N			(1/20)	(1/90)	1231	(K.)	128	-	(イツ)	(100/1)
	H-V 1 L L	ш	G BRA	CH 2.4	- 5100	N RUAD AT	12. 6 44	4º FROM LT. WE								
_	~	31 AUG79			•		6-164		•	•	•	•	•	•	•	•
	~	31AUG 19			•		6-185		•	•	•	•	•	•	•	•
	٧	31AUC /9			•		6-186		•	•	•	•	•	•	•	•
	. •	31AUG79		m	•		6-167		•	•	•	•	•	•	•	•
	ų	1 SEP79			•		6-188		•	•	•	•	•	•	•	•
	~	1SEP79			•		6-186		•	•	•	•	•	•	•	•
	~	15EP79		~	•		067-9		•	•	•	•	•	•	•	•
	M	156 P79		15EP79	•		161-9		•	•	•	•	•	•	,	•
	4-V111 F		S REAL	SPRING BRANCH	1	CCA DETAN OF										
	<u> </u>		1645	96170m	•		6-295		•	•	•	•	•	•	•	•
	*	S3MCV79	•	~			740		•	•	•	•	•	•	•	•
_																
	H-VILLE	LE SPRING	<b>3 2 3 9</b>	4CH 2.4		SULPHUR SPR	PR INGS									
	m	40CT79 1640	30		•		6-297		•	•	•	•	•	•	•	•
_	•	23NOV79	•	23VQV 75	•		6-473		•	•	•	•	•	•	•	•
	4 - 1 7 - 1	341405 91		4 2 104400	40	04 TO 10 10 10 10 10 10 10 10 10 10 10 10 10										
		SABIE 79	4 C C C	- 0			4.0-4		080-0	080-0-2	000	1 90	9	0.0	0.280	0.520
	-	26 43 67 4	1402	264 US 79	1424	COMPOS ITE	6-078		0.000	0	, 0	0	, c		080	00
		26A16.79			711	COMPOSITE			00000	· ·	· ~		· •	0.040	001 0	0-420
_		27AUG79			1033	COMPOSITE	_		0	· •	· 🗸	· •	· •	0.00	000	000
	_	27AU679			1410	COMPOSITE			0	0 V	· V	· V	· V	0.00	000	0
	~	28AUG79			1 143	COMPOSITE	-		08000	<b>~</b>	<b>o</b>	°	<b>o</b>	0000 >	0000	004.0
_	_	29 AUG79		~	1140	COMPOSITE	880-9		0	°	°	°	<b>o</b>	< 0.040 >	00000	004.0
	7	2SE P79		25EP79	2	COMPOSITE	6-166		0		°	0	°	0000	0.4.0	0.710
	~	25EP19			337	COMPOSITE	991-9		0	о У	°	о У	°	× 0.040	0000	0.400
-	~	2SE P79					21-9		0	o .	• •	о У	0		0000	0.400
	~	25EP79				COMPOSITE	6-172		0	~	o V	o ~	o .		0	0040
	~ 1	25EP79	~	25EP79	~	COMPOSITE	6-174		0	0 ·	<b>o</b>	0	•		000	00
_	~ (	35EP79		35EP 79	•		6-176		< 0.080 ×	<b>o</b>	<b>o</b>	<b>O</b>	<b>o</b>			004.0
	2 '	3 SE P 7 9			<b>~</b>	vo :	6-178		0	<b>o</b>	<b>O</b>	0	o (	9 (		004.0
	7 (	4SEP79			-	COMPOSITE	091-9		•	0.0	<b>O</b>	0	<b>0</b> (	0.00	0	004-0
_	٧,	335677	3		777	COMPOSITIE	791-9				080-0 >		0000			
	<b>4</b> (	2140674			•		641-0		•	•	•	•	•	•	•	•
	<b>4</b> C		26.21	2140617	•		\$61-Q		•	•	•	•	•	•	•	•
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	<b>y</b> (	STAUGIY STEET	-	3140679	•		061-0		•	•	•	•	•	•	•	•
,	۰,	1367			•		167		•	•	•	•	•	•	•	•
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	۰,	265507			•		167-0		9 0	<b>,</b>	) (	) (	<b>,</b> \		38	
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	`				7. 1	7	971		•	<b>,</b>		•		5	•	) }

# ENGINEERING AND "NVIRONMENTAL STUDY OF DOT CONTAMINATION MUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHELER RESERVOIR, ALABAMA

TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

•	• •	1.850 2.030	1.900	2.190	2001	1.250	1.530 1.910 1.910 1.910 1.910 1.720 1.720 1.930
	• •	1-690	2790	2.030	2000	000	54444444444444444444444444444444444444
•		0.110	0.100	000100	001100	0000	0.110 0.110 0.130 0.120 0.120 0.120 0.120
•		0.110	0000	0.000			0.00 0.00 0.00 0.00 0.00 0.11 0.00 0.00
•		0.900		0 0 0 0 0		000	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
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		0 O O	<b>~~~</b>	V V V V	V	/ V V V	
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ANC H-HSB 5.13							
OR TH BR. 6-202	5 8 8 8 E	6-003	000-4	6-013		6-211 6-273 6-275	6-103 6-103 6-104 6-113 6-113 6-113 6-114
¥	z z	COMPOSITE COMPOSITE	COMPOSITE COMPOSITE COMPOSITE	COMPUSITE COMPOSITE CUMPOSITE	COMPOSITE COMPOSITE COMPOSITE CUMPOSITE	COMPOSITE COMPOSITE COMPOSITE	COMPOSITE COMPOSITE COMPOSITE COMPOSITE COMPOSITE COMPOSITE COMPOSITE COMPOSITE
•	• •	926	20031		0000-	4030-	1216 122 123 123 123 123 123 123 123 123 123
MCH 5.6	1SEP79 1SEP79 1CH 5.6 1SEP79						- TRIANA 25 EPTO 25 EPTO 25 EPTO 35 EPTO 35 EPTO 45 EPTO 45 EPTO 55 EPTO 55 EPTO 55 EPTO
1 ,5 1	1015 6 5 6 8 8 10 15						1.97 - 9 1158 9 1442 9 1541 9 158 158 158 158 158 158 158 158 158 158
			27 AUG7 9 28 AUG7 9 28 AUG7 9	29AUG79 29AUG79 28 SE P79	28SEP79 29SEP79 30SEP79 13CT/9	30C 179 30C 179 30C 179	CREEK 25EP7 25EP7 25EP7 25EP7 35EP7 45EF7 45EP7 45EP7
		I I I I	- ·	1 M M M 1	17 M M 171 N	ପ୍ରୀ ଆଗୀ	INDIAN AND AND AND AND AND AND AND AND AND A
2017 C CONTO / COT C /	SPRING 9NANCH 5.6 - LEFT BANK-NORTH BRANCH-HSB5.13  SERING 9NANCH 5.6 - LEFT BANK-NORTH BRANCH-HSB5.13	+-VILLE SPRING BRANCH 5.6 - LEFT BANK-NORITE 6-470	H-VILLE SPRING PHANCH 5.6 - LEFT BANK-NORTH BRANCH-HSB5.13  H-VILLE SPRING PHANCH 5.6 - LEFT BANK-NORTH BRANCH-HSB5.13  Z 154 P79 1105 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 256-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 256-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 256-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 256-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158-DRAIN EAST OF FILTER PLANT  Z 154 P79 1015 154 P79  H-VILLE SPRING BRANCH 5.6 - 158 P79		4. ZENDY79 1014 ZENDY79 1028 COMPOSITE 6-470 4. LEFT9 ANK-HORTH BRANCH-HSB5.13 2	H-VILLE SPRING BAANCH 3.6 - LEFT BANK-HORITE 6-470  H-VILLE SPRING BAANCH 3.6 - LEFT BANK-HORITE BANCH-HSB3.13  Z 15EP79 1105 15EP79	H-VILLE SPRING BHANCH 5.6 - LEFT BANK-HISB5.13  H-VILLE SPRING BHANCH 5.6 - LEFT BANK-HISB5.13  H-VILLE SPRING BHANCH 5.6 - LSB-DRAIN EAST OF FILTER PLANT  LSEPTY 1015 1SEPTY

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK 6 - ASSESSMENT OF DDI TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

BEGINNING ENDING DATE-11WF DATE-11ME 4MDV79 1450 24MDV79 1529 6MDV79 1300 26MDV79 1330	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			0.00	4-000 000-0-0	0.0	100 P P P	MINIMIN	1
Ŧ	74.25.77.25.6	LASIU	0	֡֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜					TAXITA
	LOCAT 10N		(16/L) (16/L)	(1/91)	(100/1)	_	(780)	(イタハ)	(イタの)
	COMPOSIT	6-402	~	0.760	1.100	2 10	0-230	2.290	2490
		370	0.100 < 0.1	0.920	1.390	500	0.370	m	3.380
	COMPUS 11	904-9	0.100 < 0.1	0.650	20.20	0.140	0.170	2,010	2.210
28NDV79 E41	COMPOSIT	6-408	0.100	0.610	0.920	< 0.100	0.160	1.690	1.990
2862	COMPOS 11	6-410	0.100 < 0.1	0 • 2 30	0.720	0-1-0	< 0.100	1 •090	1.390
830 29NOV79 842	COMPOSIT	6-412	.100 < 0.1	0.560	0.820	0.130	0.150	1.660	1.860
444 29NUV79 1456	COMPOSIT	*[ <b>†</b> 0	0.100 < 0.1	0.420	0.820	8	0.1	1.240	1-640
1055 30NDV79 1105	COMPOSIT	915-9	.100 < 001.	0.310	0.620 0.	120	< 0.100	1.050	1.350
- CENTERLINE R	ROAD								
204 UG79	SOA	6-015	0.0 > 080.	0.460	0.800	0.090	0.000	1.40	1.600
26AUG 79	COMPCS		080*0 > 080 >	0.910	2.020	0.110	0.160	3.200	3.360
2 7A UG 79	COMPOS	6-016	0.0 > 080	0690	1.540	0.110	0-130	2470	2.630
27AUG79	COMPOS	6-021	0.0 > 080.	0.830	068-1	0.1.20	0.130	2.970	3,130
235 28AUG79 1302	COMPOS	6-023	0.0 > 080.	0.760	1.740	0.130	0	2.760	2.920
	COMPOS	6-025	0 > 090	0.820	1.820	0.140		2.910	3.03
2053 28AUG79 2114	COMPOS	6-027	0.0 > 080.0	0	1.730	0.130	0.1	2.750	2.910
29AUG 79	COMPOS	6-029	0 > 080 0	0	1.350	0.110	0	2.190	2,350
925 2SEP79 945	COMPOS	6-171	0.080 0.1	0.810	1.580	0.130	0.1	2.870	2.450
2SEP79 1	CCMPOS	6-123	.080 < 0.0	006.0	1.490	0.120	0.1	2.690	2.850
2SEP79 2	COMPOS	6-125	0.0 > 080.0	0.870	1.5 10	0110		2.670	2.830
3SEP74 1	_	6-127	0 > 080 • 0	0.820	1.660	0.120		2.780	2.40
35EP79 1	COMPOS	6-129	0.0 > 080.	0	1.380	0.100	0.1	2.430	2.590
35 EP 79 I	COMPOS	6-131	0 > 080*	0	28	0.120	•	2.20	2.700
4SEP79 1	COMPOS	6-133	0.0	0	1.630	9:18	0-150	2-140	2.950
4SEP79 1	SOME	6-135	0 0 000	0.860	1.5 10	0.0	0-130	ņ	2.70
	COMPOSITE	6-137	90 < 0.0	89.0	8 0 1	6	0	1-800	1.960
55EP79		6-20¢	•	•	•	•	•	•	•
275EP79	CCHECK	9-225	0 > 080 0	0	2.730	0.080	0.110	3.550	3.710
28SEP79	-	6-224	0 > 080	0	0 .	8	0.120	1.610	1.70
SUSEPTY	COMPO	9-526	0 > 080.0	0	2000	0.000	000	2	1.62.30
100179	SOMPOS	6-228	080	0 (	0.120	0.050	0.000	1.230	0.66-1
61100	SOLUTION OF	117-9	0 > 080 0	0 (		0.000		001-1	0
300		617-9	0 > 080-0	9 (		0000			
		187-0	0 2 0 0 0	<b>)</b> (		3	0000	201.	1.550
7		6-783	2 2 2 2 2 2	۰ د	0000	0000		000	200
24MOV 79	COMPOS	814-9	0 000 0	0	1.100	0	0220	7.150	7.180
2 MOV 79	COMPOS	212	× 001.0	0	0.930	001.00	0.150	1.680	1.980
26N OV 79		6-422	0 > 001.0	0	1.030	0.170	8.1.8	2.060	2*560
27NDV79 1	COMPOS	9-454	0 > 100 < 0	•	0.630	0	0.110	1.190	7.490
284 GV 73	COMPOS	9-450	0.100 < 0.1		0.870	7		1.500	<b>1.8</b> 00
	COMPOSIT	6-428	< 0.100 < 0.100 >		0.6.0	< 0.100 ×	0.100	1.530	1.630
	COMPOSIT	6-430	1.00 > 001.	0.560	0.710	< 0.100		1.480	1.780
1330 2940V79 1345	COMPOSIT	6-432	< 0.100 < 0.100 >	0.970	34.6	0.160	0.340	2.950	3.150
55 30MOV79 1404	COMPOSIT	6-434	100 > 001		4	< 0.100	< 0.100	0.900	1.300

FOOTNOTES: A. MISSING DATA FOR DISSOLVED DOT CONCENTRATIONS INDICATE ANALYSES WERE PERFORMED FOR TOTAL DOT CONCENTRATIONS ONLY. B. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. L. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

# ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

CONCENTRATIONS OF DDT MEASURED IN WATER (UG/L)

DDT-0,P DDT-P,P DDO-0,P DID-P,P DDE-0,P DDE-P,P HINIMUM MAXIMUM (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) (UG/L) BEGINNING DATE-TIME RAIN EVENT

HORIZONTAL LABID LOCATION ENDING DATE-TIME

# ENGINEELING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

										CONCENTR	ATIONS	CONCENTRATIONS OF DOT MEASURED IN	A SURED 1	N SEDIME	SED IMEN 1-06/6		
	RAIN	BEGINNING DATE-TIME	_	ENDING DATE-TIME		HORIZONTA LOCATION	L LA810	SUS-50	HORIZONTAL LABID SUS-SOL VOL-SOL LOCATION (MG/L) (T)	001-0,8	001-00		(9/9) (9/9)	00E-0.P	006-P.P	MINIMUM (06/6)	HAXIMUM (UG/G)
	H-VILLE 1 26	E SPRING BRANCH . = 28AUG79 10.20 28AUG79	9RANCH 10 20 28	4 CG 78	N EN	0110	AINING 6-091	H URAINING LANDFILL 6-091 11	•	•	•	•	•	•	•	•	•
	H-VILL	H-VILLE SPRING BRANCH	BRANCH .050 284	4 6 33 A	x .	GD MATER	WELL RS-024 6-097	-024	•	•	•	•	•	•	•	•	•
•	H-V116	H-VILLE SPRING	1100 234UG79	A UG 79	SPR ING	PUOL	ON RT BANK-MI 6-099 11		•	•	•	•	•	•	•	•	•
_	א-אזרר	H-VILLE SPRING 1 28AUG79 1	: BRANCH	A UG 78	TRE/	TREATED WATE	MATER FROM DOT 6-095	007 01TCH	• 5	•	•	•	•	•	•	•	•
-	H-VILL	H-VILLE SPRING 1 28AUG79 1	9KANCH 10 20 28	1CH	TAD.	UNTREATED WA	WATER IN DDT 6-093	001 01TCH		•	•	•	•	•	•	•	•
-	H-VILL 1	., ~	_	2.4 -	00:00	ROAD COMPOSITE	_	180	•	6.240	185	4 -220	6.8 10	2.020	4.380	4.380 208.670	208.670
	. د	26AUG79 1			1247	COMPOSITE	6-036	Ν.	•	•	•	•	•	•	•	•	•
_	<b>-</b>		14.20 241	264 JE 79		COMPOSITE		n r	• ,	•	•	• •	•	• (	• ,	• (	• (
	• ~•					COMPOSITE		1 4	. •	• •	• •	٠.		. •	. •	•	• •
_	~					COMPOSITE	•	~	•	•	•	•	•	•	•	•	•
	,,,	27 AUG79 1	1153 271	27AUG79 1	1216 C	COMPOSITE	690-9	700	• •	0.4	6.0		94.540	1.180	2.080	10.420	10,620
_	٠					COMPOSITE			• •		3	•					•
			~	29AUG79 1		COMPOSITE		•	•	•	•	•	•	•	•	•	•
,	~ ~	25E F79	315 25	25EP79 25EP79	357 5	COMPOSITE	0+1-9	<b>~</b> •	• (	•	•	•	• '	• •	• •	• •	• (
_	. ~					COMPOSITE		\ \	• •	. •	. •	• •	• •	• •	• •	• •	
	~				240	COMPOS 1TE	_	- -	•	•	•	•	•	•	•	•	•
_	rw n	35E P79	98 4 8 4 8 4	35EP79	33	COMPOSITE	6-159	۰ ۲	•	•	•	•	•	•	•	•	• 1
	۰ ۷					COMPOSITE	-	<b>,</b> ~	• •	. •		• •	• •	• •	• •	• •	• •
_	N 1	5SEP79 1	1325 5:	5SEP79 1	1340	COMPOSITE	6-165	۵:	•	•	•	•	•	•	•	•	•
						COMPOSITE			• (	• (	• (	• (	• •	• (	• •	v (	. •
_				295EP79		COMPOSITE			٠.	٠.	• •	• •	•	•	•	•	•
,		_				COMPOSITE			•	•	•	•	•	•	•	•	•
	<b>~</b>					COMPOSITE	_		•	•	•	•	•	•	•	•	•
_	m r	200179			000	COMPOSITE	-	2:	•	•	•	•	•	•	•	•	•
	n m		1536	40C T79		COMPOSITE	6-290		• •	• •		• •	• •	• •	• •	.s %	• •
J	m				_	COMPOSITE			•	•	•	•	•	•	•	•	•
,						COMPOSITE	-	16	22.8	•	•	•	•	•	•	•	•
	•					COMPOSITE		•	30.9	•	•	•	•	•	•	•	•
J	• •	24M0V79 1	1900 245 2001 245	24NOV79	1913	COMPOSITE		<b>*</b> -	24.4	• •	• (	•	• •	• •	•	• •	• •
	•	~				COMPOSITE			25 -8	. •	, •					•	•
	•	26NCV79 1				COMPOSITE	6-447	7	10.5	•	•	•		•	•	•	•

# ENGINEEKING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

<b>*</b> •	44. FROM LT. W
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20 4 N	
~ 4 * * * * * * * *	1928
	340 10 10 10 10 10 10 10 10 10 10 10 10 10
	85300
	2 0 4 E
20.7 25.2 25.2 25.0 25.0 25.0 42.0	8 50 8 50 8 50 8 50

# ENGINERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

2

#### TASK 6 - ASSESSMENT OF BOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

DD 18		•	•	53.600	55.670	51.400	52.690	•	•	10.950	13.700	23.040	•	•	27.990	15.730	04.67	24.070		43.700	•	•	38.580	054-04		13.040	•	010-2 5	34.580	•	•	•	•	•	•		235.540	• •	
107AL	MINIHUM (UG/G)	•	•	53.600		51.400	53.490	•		10.950	13.700	23-040		•	27.990	15-650	25.5	24.6 70		43.700	•			20100		13.040			34.580		•	•	•	•	•		235.540	٠.	
NT-U6/6	006 - P. P (U6/6)	•	•	7.270	6.930	6.950	7 - 130	•	•	8.8 0	2.230	3.030	•	•	090	2.760	4.210	3-100		6.700	•	•	930			1.900	•	6.350	008	•	•	•	•	•	•		10-400	• •	
N SEDIME	• -	•	•	3.760	4.260	3.950	3.570	•	•	**020	0.050	1.080	•	•	1.660	1-220	1.780	1 • 3%0		2.900	•	•	2.610	7 7 7		0.720	•	2.570	1.730	•	•	•	•	•	•	,	6.110		
A SURED I	0.00-P ,P	•	•	14.400	14.100	13.000	200,100		•	22.7 00	8	6.220	•	•	9.010	84.	12.700	Rr.		15.100	•	•	201	13.00	3 .	5.290	•	14-600	2 4	•	•	•	•	•	•	!	000°	• •	
ONS OF ODT MFASURED IN SEDIMENT-UG/G	001-P.P 000-0.P	•	•	9.630	9.030	8.140	9.210		•	13.700	1.930	2 -930	•	•	4.030	2.750	014-4	3.470		7.200	•	•	2.200	01.0		2,310	•	2.890	4.770		•	•	•	•	•		10.300	• •	
AT10NS 0	001-P.P	•	•	17.600	18.000	18.500	22 • 500	2.	•	20.300	2.040	9 5 80	•	•	9.030	1.430	2.700	37.100		11.200	•	•	12.800	7.000	3.	2.620	•	10.300	12.400	•	•	•	•	•	•		143	• •	
CONCENTRATIONS	001-0,P		•	046	3.350	0.860	0.960	•	•	1.340	041.0	002.0	•	•	0.200	0.080 >	0.140	0.290		0.600	•	•	0.570	0		0.200	•	0.300	0.330	•	•	•	•	•	•	ı	1.730	٠.	
	(2) 705-164	THRU 6-199)	•	•		•	•	• •	•	•		•	•	•	•	•	•	•		•	•	•	•	•	• •	•	•	• ;	14.4	17.4	44.4	•	21.0	36.7	25.7		•	٠.	
	105-5US	6-193	95 د 9–202)	98	170	130	250	8 7	9	4.	1,0	51	35	58	7.2	2	140	201		96	8	31	2.5	310	2 7	86	21	<b>8</b>	9 40	7					7	i	Ξ,	r <b>4</b>	
	ONTAL LABIU	(COMP 3F	JF 6-200 THRU SITE 6-204	-007	<b>9-00-9</b>	900-9	900-9	719-0	6-014	6-032	6-213	6-217	6-216	6-268	0-210	6-272	6-274	6-276		<b>901-9</b>		_		6-112					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		•			0 115				200	
	HDR 123NTA	SI	COMPOSITE	COMPOSITE	COMPOSITE	CCMPOSITE	CUMPOSITE	COMPOSITE	COMPOSITE	COMPO SITE	30 COMPOSITE 6-21	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	3 1 1 S Dallio D	COMPOSITE		COMPOSITE	COMPOSITE	STISOAMOD	COMPOSITE		COMPOSITE	COMPO SITE	COMPOSITE	COMPOSITE	COMPOSITE	CUMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE		COMPOSITE	COMPOSITE	
		٠, _	19 1105	•	-	= :	. ·	14	.,	<b>-</b> .	0 4	~	*	7	13	3	Ξ.	4	ş	1216	1457	1854	1015	25.	1132	1 808	1050	1013	1 230	927	3	1549	85	1456	1 105	CENTERLINE ROAD	1.07	1133	
	ENDING DATE-TIME	ANCH 5.	TANCH SOL	- TRIANA			2 27AUG 79				XO 285EP79 XO 265EP79	~				•		0 500179	AMAL AT - 1	m				35577					6/ ADM47 0			~	~	~	5 3 OND V 79				
	BECINNING JATE-TIME	H-VILLE SPRING BRANCH 5.6	M-VILLE SPÄING BRANCH 5.6 - ( 2 ISEP79 1015 ISEP79 1105	CREEK 1.9 -	_		27AUG79 1415	_			285EP79 1000 265EP79 1600					62179	300 779 1253	500179 141	CREEK 1.97	•	SEP79	~		35EP/9 124/	SEP79	45E P79 1752			26NOV79 1450						30NOV79 1055	AN CREEK 4.6	26 AUG79 1132		
	RAIN EVENT	h-VILLE 2 3	H-V11LE	INDIAN CREEK	, ,,,	7	<b>~</b> ~				~ ~								INDIAN	~						~			, ,		7 7	~	<b>*</b>	\$	*	INDIAN (	1 2		
	•		-	-		-					-					-		•	-		_			-		J		,	_		_			-		-			

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

							CONCENTR	AT10NS 0	F DDT ME	ASURED I	N SEDIMENT	NT-UG/C	TOTAL	DO TR
END ING	Z	ی	HOR I ZONT AL	LABIC	SUS-50L	VOL - 50L	P.O-T00	9. 4-TOO	0.000	4 4 000	0.0-300	00E-P.P	MINIMUM	MAXIMUM
DAT	ı	DATE-TIME	LOCAT 10N		(HG/L)	12		(2°2)	(2°3)	(P9)	(9/90)	(9/90)	(9/90)	(9/90)
1535 27AUG79	3	79 1 55	~	£-025	60	•	•	•	•	•	•	•		•
1235 28A	28A UG 79	79 1302	COMPOSI	6-024	£	•	1 .7 10	126	13.400	57.200	5.410	9.020		212.740
17 05 26AUG79	3	79 1730	COMPOSI	6-026	92	•	0.870	57.200	6.50	11.700	1.810	4.170	82.390	62.390
2053 28AUG79	ž	79 2114	CUMPOS 1	6-028	8	•	2.020	8	12.000	48.400	5.300	9.100		182.820
1337 29AUG79	ž	-	356 COMPOSITE	060-9	37	•	1.670	54.600	15.500	26.700	5.450	9.720		113.40
	2 <b>SEP79</b>		\$5 COMPOSITE	6-122	670	•	0.0	64.500	040.4	27.600	1.820	11.300		109.910
	2S EP 79	63.1 2	COMPOS 1	6-124	78	•	2.100	96.600	8.520	45.600	5.720	14.800	173,340	173,340
	2S EP 79		COMPOSI	6-126	7	•	•	•	•	•	•	•	•	•
1005 35	3SEP79	79 101B	COMPOSI	6-128	22	•	•	•	•	•	•	•	•	•
1345 39	3SEP79	79 1359	COMPOSI	6-130	7	•	•	•	•	•	•	•	•	•
1642 3	35 EP79	79 1655	COMPOSI	6-132	63	•	0.680	35.900	5.160	13.200	3.800	4.560	61-300	61-300
<b>3</b> 02 91	4SEP79	79 1446	COMPOSI	6-134	~	•	•	•	•	•	•	•	•	•
1640 4	4SEP79	79 1657	COMPOSI	6-136	0	•	0.510	10.100	2.600	089.6	1.840	4.000	31.730	31.730
1355 5	5SEP79	~	415 COMPOSITE	6-136	33	•	•	•	•	•	•	•	•	•
1500 5	SSEPTO	2	•	6-207	•	•	Q. 0° 0	0.200	0.550	0.360	0.150		3.580	3.580
2150 27	27SEP74	79 2212	COMPOS 1	6-223	64	•	0.930	91.800	6.530	33.100	2.280		140.440	140.440
	285EP79	79 1004	COMPOSI	6-225	240	•	0.480	40.600	2.870	12.800	1.040		60.430	60.430
S.	30SEP 79	0%1 R	COMPOSI	6-227	48	•	1.240	90.500	10.600	30.300	4.550		146.700	146-700
	10 CT 79	79 13CC	COMPOSI	6-229	57	•	0.550	33.100	2.800	11.200	086.0		51.090	51.090
1122	200179	2411 54	COMPO S1	6-278	56	•	0.180	3.970	2.720	5.730	1.120		16-240	16-240
	<b>30C T79</b>	79 135C	CUMPOSI	6-280	160	•	0.940	21.900	4.790	10.800	2.200		44.790	44.790
1130	47C179	79 1140	COMPOSI	€-282	36	•	0.260	26.300	2.870	9.750	1.300	2.750	43,230	<b>43230</b>
1130	500179	1071 64	COMPOSI	6-284	71	•	1.010	60.700	0+0-9	22.800	2.500	6.040	060°66	060066
358 2	2+ND V79		404 COMPOSITE	414	6.1	•	0.560	22,200	5 .080	13.900	2.100	4.570	46.430	48.430
1103 2	24M0V75	75 1112	COMPOSI	6-421	<b>6</b> 0	13.2	•	•	٠	•	•	•	•	•
1105 2	2 45 CW 75	79 1116	COMPOSI	6-423		13.0	0.890	62.500	12.400	32 - 2 00	3.550	11.300	122.840	122.840
1134 2	2 TNOV 79	79 1146	COMPOS 1	6-425	~	11.2	•	•	•	•	•	•		•
7 12 2	28N0V79		928 CUMPOSITE	6-427		10.6	0.760	54.400	9.560	27.000	2.620	10.300	105.540	105.540
1550 2	2 BMDN 19	79 1612	COMPOSI	6-459		•	1.040	41.600	6.880	17.300	2.540	6.120	75.480	75.480
	29NDV 79		EZO COMPOSITE	6431	350	13.7	1.080	33.600	10.400	27.500	3 • 4 50	9.130	85.160	85-160
	2 9NOV 79	79 1.345	COMPOSI	6-433	۳,	6.6	0.580	40 B 00	4.640	16.300	3.060	6-120	71.500	71.500
1355 3	30N0V79	79 1404	COMPOS 1	6-435	19	12.2	•	•	•	•	•	•	•	•

FCOTWITES: A. MINIMUM TOTAL DDTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERD. B. MAXIMUM TOTAL DDTR CALCULATED HY SETTING ALL LESS THAN VALUES TO THETR ABSOLUTE VALUE.

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

AL DD TR	X V	;	13.32	10.39	5.37	6.26	5.26	4.45	٠																			3,35		•	•	•			•	•	•	•	•	1.83		٩ -	1.14
101	Z		13.32	10.39	5.37	6.26	5.26	4.45	•	9.40	•	2.88	• ?	900	1.02		90.1	•	0.68	•	1.22	•	1.10	•	6.12	• • •	•	3.30	•	2.06			1 .62	•	2.61	• ;	79.7	. 6	•	1.77	•	16.0	1.08
(US/L)-	a.		1.58	1.15	0.61	0.69	0.47	0.45	•	0.51	•	8	• ;	* 0	. 20	•	0.13	•	0.10	•	0.10	•	9. 9.	•	0.65	• 6	6	0.37	•	0.25	. ;	3	0.23	•	0.27	•	0.24	• 0	,	0.21	•	۶. و	0.16
AATER (UG	0		09.0	0.42	0.22	0.26	0.19	0.22	•	0.21	•	0.17	•	61.0			0.05	•	0.0	•	0.07	•	0.07	•	0.26	. ;	0100	0.13	•	0.08	•	3	0.07	•	0.0	•				8	•	0.05	0.05
DOT IN P	a.		\$ 0.00 0.00	3,52	1.78	1.89	1.49	1.09	•	1.31	• ;	0.85	• ;	1.10	. 5	;	0.28	•	0.27	•	24.0	•	98	•	2.	• ,	*C • 7	1.06	•	0.71	• 3		09.0	•	0.10	•	0.76	. 4	•	0.68	•	0.31	0.32
SPENDED	<b>a 6</b>	,	5.09	1.50	47.0	0.85	0.54	19.0	•	0.63	•	0.49	• ;	***	. 2		0.17	•	0-14	•	0.23	•	0.21	•	0.74	•	0.00	0.41	•	0.24	.;	77.0	0.23	•	0.24	•	0.21			0.20	•	0.18	0.14
ENTRAT IC	م		3.84	3.53	2	7.	2.42	1.83	•	3.64	• ;	0.91	• 8	3	, G	•	0.41	•	0.10	•	12.0	•	0.26	•	2.18	• .	1.07.3	1,33	•	0.11	• ?	1002	0.50	•	1.52	• .	*	. 8		0.62	•	0.22	0.42
CONC ENT	<b>a</b>	,	0.65	0.28	0.22	0.14	0.14	0.19	•	0.16	•	0.10	• (	0.0	• 0	}	0.02	•	0.02	•	0.04	•	0.03	•	< 0.05	•	- C-	0.05	•	< 0.05	• 6	600	< 0.0 >	•	< 0.05	•	< 0.05			90.0 >	•	< 0.05	90.0 >
NS 4.0			0.0	0 0	4	•	0.4	3.0	2.0	0.4	•	0.6	0.0	2.0	0 6	2.0	2.0	4	1.0	<b>5°</b> 0	2.0	< 1.0	1.0	2.0	11.0	• :	0 0 1	16.0	•	28.0	• ;		17.0	•	19.0	•	20.0			29.0	•	27.0	18.0
	くつ*)-	1	26.0	•	10.0	19.0	18.0	13.0	11.0	12.0	0 11 0	11:0	0.11	0.01					80	0.7	7.0	2.0	0.2	0.9	16.0		•	18.0	•	16.0	•	10.0	16.0	•	15.0	• !	15.0			13.0	•	16.0	12.0
-SOL 10	İ		130.0	91.0		•	50.0	49.0		52.0			52.0	5 · 5 · 5	0 1				22.0	20.0						* ;						200			82.	8	72.0	2		63.0	_	61.0	26.0
30,000	Ē		6	99	3.5	80.0	53.0	25.0	28.0	7.5	24.0	25.0	27.0	7.300	200	2.00	21.0	65.0	34.0	69.0	Q.	26.0	13.0	38.0	35.0	9000	ָ	47.0	24.0	33.0	000	22.0	26.0	87.0	30.0	<b>26.0</b>	8 18	•	28.0	42.0	23.0		<b>6</b> 6
sus	イッチ		8.5	4.0		0	4	3.0	2.0	13	2.0	0° E	3.0	0 0	2 6		0.0	0-1>	0.1>	<1.0 1.0	0° 7	<1.0	<b>1.</b> 0	<1.0	0.8	9 (	•			9				13	3.0	0.	o (	\	,,	3.0	3.0	7.0	₽ C.
	LABIO	Q <b>V</b> D	6M-13	0 H - 1 4	2 - 2	5	6M-17	6M-56	0M-57	64-58	64-H9	09-H9	10 × 0	79-10	201	79-W9	6M-66	6M-67	5M-68	69-W9	SK-70	17-80	6H-72	6H-73	67-34	67-35	06-10	16-19 86-19	67-39	04-60	14-10	24-19	67 44	67-45	67-46	67-47	67-48	64-10	27.64	67-52	67-53	7-19	67-55
	F CO	wore R	) - <del>(</del>	1 1	1-4-	1-40	1-40	1-40	0.00	1-40	0.60	7-1	0.60	ا ا ا	ب ا ا	4	1-40	2	1-40	0.60	1-4C	0.60					֝֞֝֝֝֝֝֝֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֡֓֓֡֓			-		7 6	-		_			) ( ) (			0.00	7-1-	0.60 1-40
	ž	3	120.7 1-40	1657	7	205	1535	2112	2112	39	æ M	440	44.5	200	13.0	1130	1075	1025	1404	1404	931	931	1435	1435	1505	1505	200	1805	1805	2100	2100	0000	210	210	435	435	632	632	100	1030	1030	1145	1145 1320
ENC ING	UATE-T	NCH 2.4	8746	37478		9 JAN 80	9 34480		22JAN80		37 AN 80	JAN80	23 JAN80	23.1ANBO	CONTROCT SALANSO	23.1ANED	24.JAN80	24.JAN BO				25 JANBO	25.3 AN BO	25 JAN 80	17MAR 80	17MARSC	THAKED				17MARBO			18MAKBO	18 MAR BO	BWARBO	18 MAR BO	LUBRAKED		. ~	8MARB0	~	BMAR BO
, و	<u></u>	- ≲	٠,		•	-	-	20502			• • •			7 649												1300 17					20407				00			000					1120 16 12 5 19
BEGINNING	DA TE 7 1 46	SPRI		JANEO 15			0	3		\ \ \	SE	2	_		-	23.JANRO 10		24JAN80 5				25 JANEO 9			0	0 0	2 0		480		3	17MAR60 23	90	0	0	ے دو	0 6 6		2 0	0 00	180 1	0 9	MARBO 11
	- 2 3 7	۷! ل	<b>~</b>	E .	7 ~	. ~	-	~	~	7	~	~ 1	~ (	-																						8	2 :	2 .	-		7	<b>6</b> 0 (	7 164

ENGINEEPING AND ENVIRUNMENTAL STUDY OF DDI CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHELER RESERVOIR, ALABAMA

TASK 6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

	M OO	A A		•	0.61	•	• •	96.0		77.7	<u>ځ</u>	•	0.15			•	•	0.31	• ;	0.37	0.53	}	0.37	•	0.83	•		7		0-27	•	0.10	01.0	•	5	. 8	60.0	•	80.0	•	٥. د	0.15
	TOTAL	Z I	74.0	•	0.60	• •		0.91	• .	1991	0.31	•	0.14	•		•	•	0000	•	67.0	.47	;	0.28	•	0.79	•		8	3 6	90	•	70.0	00.0	•		•	8	•	00.0	•	7	0.05
<b>ピイ!</b> ―		4	• 0		0.07	• (		0.17	• 6	07.0	0.0	•	0.02	۶.		•	•	\$	• 3	900	.8	} .	0.03	•	0-14	•		9	70.0	0.03	•	10.0	0.0	•	10.0	•	0.0		0.01	•		0.03
ATER IL	O	0	. 0		0.03	• •		0.05	• 6	9	0.0	•	0.0	0-0-0	•	•	•	0.03	•	2000	0.0		0.02	•	900	•		3	300	0.0	•	70.0	0.01	•	10.0	• 6	0.0	•	0.0	•	200	0.02
DDT IN	2000	9,9		•	0.19	• •	. •	0.33	. ;	5000	0.10	•	0.04	• 6	•	•	•	> 50°0 >	• 3	80.0	0.20		0.07	•	0.27	•		,	40.0	9000	•	2000	< 0.02 <	•	• 0°05 •		2000	•	< 0.02 <	•		0.03
DNS OF	10 L	0,0	•	•	0.11	• •	• •	0.18	.;	77.0	0.05	•	0.02	• 0		•	•	< 0°0 >	•	*00	.0.0		0.03	•	0.16	•				4000 X	•	20.0	< 0.0 ×	•	20.0 >	•	20.0	•	20.0 >	•	۲0°0 ۰	< 0.03
ENTRAT I	0	4	. 6		& 0	•		0.19		0.0	0.09	•	0.05	.0.0		•	•	60°0 >	•	0-11	•0	<b>.</b>	9. 38	•	0.18	•		:	0.13	800	•	70.0 >	< 0.02	•	20 0 >		0.00	•	< 0.02	. 0	21.0	< 0.05
ONG O		0,0	. 0		< 0.01	•	٠.	< 0.07	• 3	10°0 >	< 0.03	•	10.0 >	• 0	ì .	•	•	< 0.07	•	90.00 >	40.0	,	*0°0 ×	•	< 0.05	•				< 0.05	•	70.0 >	< 0.02	•	20°0 >	• • •	< 0.02	•	< 0.02		` · ·	00.0 >
	0.450	1	• 4	•	16.0	• •	•	0.4	• ;	3.0	• •	•	51.0	• 64		0.99	•	27.0	•	15.0	. 0	•	13.0	•	2.0	•		•		7.0	0.0	0.0	0.0	7.0	0 .	••••	2.0	2.0	1.0	0 % V	0.07	23.0
DS	100	79K)			0 10°C	17.0	•	0.91 0	•	97	0 14.0	•	۵.			_	_	_	• ;	0.	• 6	•		•	0.9 0	•		30	0.00	0 15.0	0 14.0			3.6 0		•	3 6	•	•	0 6 0	777 0	0 16.0
SOL 1	SUS		56.	6,4	9	37.	39.	30.	31.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	24.5	27.		0110		`_	_		*	2	22.0	21.	1 6	18.	17.	0 15.		130	5 42	84.	78.						20.02			_	200	120
	)	(2)	· · ·	,	26.0	• •	•	_	30.0		٠.	_	_	38.0		_	0.0	_	•	_ ,			• •	0 18	0 14.	50.0		77		1 21.	200	5 6	217	0.42 0	60 E		. 6	36	56	22	9 6	686
	SUS	( MG/	7	2	~ ;		3 1.	04 <1.	25 1.0	٥ ٢														9 4	70 2.0	73 6.		Ċ			<b>≟</b> ;								_	0.17	۔ .	101
		C LABIT	67-5	67-5	5:	0 1 1 4	67-10	1-19 3	-19	01-10	, •	•	v	261-19	, -	•	~	•		•		•	-	: 67-10	C 67-1	C 67-1	6 ( 3	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		6M-7		-	3	9	5	0 4		3	3	64-96	2 2	2 2
			320 0.60			304 0.60	• 0	~		4 3 1-4C				100 000					79.0 254		413 1-60		, ~	0	_	56 O.6		25.14.	9 6	20 1-40	79.0 0	7 - 1 - 4 - 1	15 1-40	815 0.00	35 1-40	70.00		_		334 0.66	٠,	1-1
	TW.	Ξ.	200	2	200	2 G	 8	7 082	2	5401 082	္ င္အ	80			2 0	9	30	30	1 082	1 080	2 6			1 03	80 1	11 09		000	~	180 18	91 C8A	2 0 0 0	160 3	80 8			4			JAV80 12	•	 
			8 .		18MAR			19MA		20MAR				21MAR				24 M	Z4 # A	26 MA	28MAR	2 6	31	3144	3.			0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		•		•			•	,	25.3	~	2	~ :		17.
	SE SE	E-1 14E	0 1255						0 1802				0 1030			٠.		~	_ (		1364		. –	~	_	•	3		2215	1745	3 1745									1304		
	1	DAT	15MAKS	BMARB	18MARB C	LEMAKED.	19MAK80	1 SMARE	19MAR80	COMPESSION	20MARE	•	43	21MARE	22MARS	3MARE	23MAKE	24MAP8	THE REC	COMARS	ZEMARBI Zemarbi	ZEMAREO	31MAK 50	α	4	APRB	4	LLE STRI	I S. JANE	22JANE	JANE	25JANE	23JA%F(	23 JANBC		) 13 4F 4 7	25JANE(	25.34%8(	53478	21JANEC	JAMAK C	7 2
	R A TA	VEN V	۲,		~ r		-																			~	3	7.												۰۰		

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

Topic Promotering

TASKO - ASSESSMENT OF DDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

	ž	NO 12	و			SUS	<b>V</b> OL	SUS	NO.	0.45	-	100		; <del>-</del>	000		-006	į	TOTAL	00 TR
ENT DAT	ī	DATE	=	HUC.	LA3Iū	[M6/L]	(#) (	-	10H1-			0 b	٥	0 ° 0	<b>d</b>	ó	•	٥	ZII	MAX
=	၁	174 AR		•	67-65	9	21.0	110	•	•		•	•	•	•	•	•	•		•
7.5		174AR		_	67-66	16	41 %		18,0	14.0	o V	0.03 <	800	£0°0 >	20°0 >	<b>%</b> <b>~</b>	2 < 0.	.02 0	00.0	0.15
17		174AR		u	19-19	ر. م	32.0	5.	•	•		•	•	•	•	•	•			•
. E		17MAR			67-68	01	15.0	89.	15. C	29.0	o V	> 90.	0.08	*0°0 >	< 0.03	0.0	3 < 0.	03 0	00.0	0.26
ì		1744R		•	69-19	13	28.0		•	•			•	•	•	•	•		•	•
M / M		17MAR		_	67-70	0.4	23.0	73.0	16.0	18.0	o V	× 40°	90.0	< 0.03	20°0 >	0.0	2 < 0.	•05	0.0	0.19
7		I 7M AR		• •	67-71	0	12.0	0.0	•	•		•	•	• '	•				•	•
7 N	1866 1235	# C	312	1,	67-72	(A)	2.00	200	10.0	14.0	٥ ٧	, 03 ×	40.0	< 0.02	C.01	0.0	o ~	0 70.	90.0	0.13
- E - C - C - C - C - C - C - C - C - C		H B T		0	67-13	O .	0.62	0.74	•	• '	,	•	•		•	•	,			•
181		LEMAR			67-74	9.0	53°0	S .	11.0	8.0	o V	<b>&gt;</b> 90°0	0.07	*0°0 ×	< 0.03	000		•03 0	00.0	0.25
2		I SMAR			47	0.I.	• ;	39.0		• (		•	•	•	•	•	,			•
£ 5.1	0 9	NAMP.			9	0.4	<b>56.</b> 0	32.0	10.0	<b>5.</b> 0	o V	> 0°0	8	< 0.03	< 0°0 >	0	0 > 1	0 70*	8	0. 1E
7	2	YARVI.		о Э	11-10	0.1.			• ;	• (	,	•	• ;	•	• (	• (	•		•	• ;
	ے در	TOWAR			0	3 (	51.0		) °0 I	0.	o ~	× 60°	0.03	20°0 >	70.0	) • O	° °	0 70*	00.0	0.12
7		NA F. C.			61-19	0.1	32.00		• ;	• ;			•	•	•	•	•			•
COMAR		XV WOZ			9		2 .		31.0	35.0		•	•	•	•	•	•			•
202		20M AR		ပ္ (	11-19	0 7	91	210.0	•	•			• !	•	• !	•	•			•
2		20 MAR			6	<b>-</b>	0 5		21.0	42.0	o >	> 30 <	0.37	< 0.21	~ 0°17	1.0	0 > 2	0	9	<b>X</b>
707	-	ZOMAR			-79	61 '	79.0		•		,		• 8	•	• 3	• 3	,			
717		¥ (		٠,	911-10	0.17	• :		12.0	0	<b>S</b>	5	9	* 0°0*	70.0	) >	2	70.		7
Ì		Z T W K			C11-/0	، ۲	0.1.	37.	-				•	•	•	•	•			•
77		SAMAS		٠,	041-10	9 6	2 6	7 0	10.0	0.22			•	•	•	•	-		. ,	•
744	• -	24 M 48			741-14	•	•	000	• 5	. 4	\ \	.03		.00	0.0	•	· c	ָם פּים	. 0	
24.84	. ~	24.MAR			67-143		•	28.0			′	, }	}			,	•		} .	•
7 W97	-	26MAR		1-4	67-158	*	7.0		•	10.0	· ·	× 40°	0.00	< 0.0 ×	< 0.02	< 0.02	~	0-05	000	0.18
ZOMARE		26MAR		U	67-159	18	13.0					•	•	•	•					•
2 BMAR	50 1324	28MAR		1	67-144	0.4		~	21.0	36.0	0	•33 <	8	< 0.22	< 0°17	1.0 ×	3 < 0	.18 0	800	1.41
28MAR	~4	28MAR	133	) • 6	67-145	3.0	21.0	83.0		•		•	•	•	•	•				•
ž	145	క	151	1	67-174	7.0	76.00		0.8	3,0	o V	· 0.	8	< 0.0 >	× 0•03	0	0 V E	•03	000	2
3 MAR	30 145B	3144880	1515	) 9•3	67-175	2.0	15.0	18		•			•	•	•	• (				•
34	125	A PR	133	)  -  -	67-172	0.0	34.0	23	8	12.0	o V	<b>&gt;</b> 90•	0.07	< 0.05	000	90	o v	0 500	0000	2.0
346	172	¥	133	٥	67-173	=	0° 27	Š.	•	•				•	•	•	-	•		•
Z	•	7																		
5 18JANBO	30 1004	18 JANBO	1022	1-4C	6H-19	13	41.0	100.0	40.0	0.0	o <b>&gt;</b>	> 60*	0.12	< 0.0 >	< 0.0 ×	0.0 >	0 > 4	0 +0•	00.	0.37
•	,																			
NDJAN CREEK 5 18JANBO	EK	TRIANA 181AN 80	1540	1-40	\$0- #9	4.0	71.0	3,	18.0	2.0	·	60-	0.15	9	0.50	0	_	0.29 1	<b>5</b>	1.54
, ,		2	204	1	3			44			,		;		4	, c		• -	, c	1
		, 4		7 7	,	•			•	; ~	, v			4	2	•	. ,		<b>}</b>	8
19 IANA		TO TANA	; <	1	9		9 7	43.0	• ^	ای د		ò	8		7.0	۰ د	٠.		2.11	2.20
10.1		, σ	162	1-14	4		6	5.4	_			ò	1	0.40	4.0		. ^		4	1.1
7	NGO 1857 2			1-40	<b>64</b> -20	2	9	28.0	8	0	· ·	0.02	0.15	0.34	0.53	0	. ~	0.26	9	1.41
	10 1857	2 JAN B	194	0.60	6M-21	0.15	23.0	30.0		1,			•		•				•	•
22.11	10 2220	NALO	230	1-40	-	0.1		28.0		-	0		91.0	0.24	0.33	0.01	0	<u>-</u>	\$	6
•	1		3 3	•			)	,		•	•		,		1		•			•
•				9	Ž	0	2	0		^		•	•	•	•	•		•	,	•

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTANINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

	804 X		0.86	•	3	0.52	•	0.58	• ;	3			2.38	• ;	3.0	7.41	•	5.35	• !	2.11			8.0	• ;	0.62	. %	•	•	•	٠.	0.43	.;		<b>%</b>	• ;	5.0	. 0		0.28	0.51		0.01
	101 AL		990	• }	8 .	0.52	•	150	• ;	0.00	. 3		2.28	•	£.	7.31	•	5.27	•	2.68		, ,	0.58	• !	0.57		•	•	•	٠.	0.38	. ;	•	0.32	•	<b>7.</b> 0	. 6		0.17	0.42		0.03
E/1)-	4	•	0-14		5	01.0	•	0.11	•	o.	•	•	0.37	• ;	0.54	0.94	•	<b>%</b>	• ;	0.33	• 2	•	0.12	•	0.10	0.32	•	•	•	٠.	20.0 >	• 2		0.0	•	5	.13	•	0.0	0.0	•	0.01
WATER C		•	1000		À .	0.05	•	90.0	• ;	0.05		•	0.12	•	0.17	0.35	•	0.21	•	0.0	. 6	<b>?</b>	40°0 ×	•	0.03	0.0	•	•	•	• •	0.03	. ?	•	< 0.02	• ;	9	.0.	•	< 0.02	0.03	•	00.0 >
F FACT IN	00	•	0.26	• ;	90.0	0.17	•	o 16	•	0.16			0.75	•	1.20	2.40	•	1.55	•	0.74	•	•	0.21	• ;	0.22	0.59	•	•	•		< 0.02	•		0.12	•	6.19	0.23	•	0.05	0.14	•	0.01
NS OF	٥	•	0.20	• ?	97.0	0.15	•	0.16	•	0.16	• .	•	0.38	•	0.52	0.00	•	0.56	•	0.27	. ~		0.12	•	0.12	0.30	•	•			0.10	. ?		900	•	11.0	0.10	•	60.03	0.00	•	0.01
BYTRATIC	T	•	0.16	•	er .	0.0	•	0.07	•	0.13		•	19.0	• ,	1.38	2.73	•	2.35	•	1.24		3	0.12	•	0.10	. 0	•	•	•	• •	0.0	• 2	·	0.08	•	• 10	0.21	•	8.0	0,13	•	20.0
CONC	7		0.02	•	50.0	0.01	•	< 0.01	•	< 0.02	• • •		6000 >	•	60.0	0.10	•	80°0 >	•	60.0		6	60.0	•	0.05	< 0.12	•	•	•	• •	0.13	• 6	•	*0.0 ×	• (	****	< 0.13	•	\$0.0 ×	.0.0	•	10.0 >
	30.450	3.0	3.0	0°7	9 4	7.0	5.0	200	0.4	٠ د د	9 6	000	0.9	•	15.0	22.0	•	35.0	•	25.0	. 86	0.1	22.0	• ;	0.6	16.0	•	14.0	•		0.0	• 6		2.0	• ;	0.17	15.0	•	37.0	33.0	•	0.0
18	70 S	0	0.6	10.0		8	0.6	0.9	8.0	<b>0</b> • 0		9 0	14.0	•	18.0	23.0	•	18.0	•	16.0	. 7		12.0	•	14.0	11:0	•	10.0		•	17.0	•	•	10.0	• ;	0.11	13.0	•	12.0	17.0	•	16.0
SOLIDS	SUS	23.0	36.0	35.0	1	32.0	33.0	33.0	32.0	30.0	26.0	26.0	79.0	75.0	000	0.09	170.0	120.0	110.0	83.0	200	71.0	55.0	52.0	52.0	44	47.0	0.0	0.0	39.0	0.04	37.6	29.0	28.0	29.0	200	0.0	0.04	57.0	36°0	35.0	25.0
	٦ 2	98.0	92.0	75.0	0.17	0.01	0.69	31.0	53.0	24.0	0 4	71.0	24.0	53.0	28.0	23.0	23.0	31.0	65.0	•	•	• •	• •	•	•	• •	•	٠	0 0	0	1.0	0 0	0.0	0.89	15.0	•	11.0	36.0	•	٠.	0.7	•
∪£3 <	SUS	0.1>	2.0	0.15	0.10	0.1>	<1.0	<1.0	<1°0	0.1	0.0	21.0	2.0	0.1	0.	0,0	0.6	2.0	3.0	000			0.17	0.17		0.17	0.15	70	ν 60 -	73 <	1.7	9 9	20,	1.0	0.7	) (	2.0	3.0	<1.0	0. J.	1.6	<1.0
, ,	TARI	6H-25			04-70 64-20	6M-30	6M-31	b#-32	6M-33	6M-34	64-35 64-35	6M-37	67-01	67-02	60.6	600	90-19	67-07	67-08	67-00	01-19	71-19	67-13	67-14	67-15	08-19	67-81	67-82	67-83	67-85	67-86	2979	67-117	67-118	611-19	071-19	67-122	67-123	67-124	67-125	67-147	67-148
	5	9	7		1000	7	0.60	1-40	0.60	1-4C	0.60	0.60	1-40	0.60	1	1-60	0.60	74-1	0.60	7-40	ر د د د د د	) () () ()	74-1	0.65	) - <del>*</del> <del>*</del> - <del>*</del> <del>*</del> - <del>*</del> - <del>*</del> - <del>*</del> - <del>*</del> - <del>*</del> - <del>*</del> <del>*</del> - <del>*</del> - <del>*</del> <del>*</del> - <del>*</del> <del>*</del> <del>*</del>	ب 1	0.60	7-40	0.60	0.60	1-60	0 0	0.6	4	39.0	ر ا ا	) + O	0.66	- 1	) \$- -*-	· Æ	<b>1-4</b> C
	3	3	245	549	1200	23	1235	4	\$	Ξ:	1110	1611	31	1315	1615	70	4	750	750	1320	1 320	1615	5.5	88	8 6 8	1333	1336	1820	1820	145	041	1 *0	1315	1726	1720	1.154	1021	10,1	1155	1155	1	m
	ENDING DATE-TI	: 5	23 JANB0	23.JANBO	23.14NB0	24.JAN80	24JAN80	24.JAN80	24 JAN 80	25.3 AN 80	25 JAN80	25JAN80	17MAR 80	17MAR80	17MAR80	18 MAR BO	184AR80	184AR80	18MAR80	I SMAR 80	1 BM AC SO	O STANS	194AR80	PHAR BO	T 2	19MAK BO	2	Ŧ	1944880 204489	Ŧ	20MAR80	204AKB0	20 MAR 60	20MAR 80	20 MAR 80	¥ q	£ ¥	4	A .	24 4 AR 80 26 4 A 9 80	¥.	¥
	GINNING ENTER	140	532	532	115	210	210	950	970	8	040	540	215	1215	1800	5000	5	723	723	1240				22	3	1300	1300	1800	1800							1011	1011			1120		
	FEGINAL TATE	SJANEO	SJANSG	Z JANEO	CANALLY OF	PANAL D	LJANEO	2-JANEC	-	47 S	4	₹ ,	7.4	4	4		4	7	4	•			3	AA	Ž.	- ARBO	LEAR	BYTHE	0.00 d m .	SAL S	PARS			-ARBC	MAR	2 A A A C	سعت س	4	a C	0 2 4 4 5 0	BUTHC	A k o
	RAIN		٥	۰۷۰	, (		•	0			4 4														- r	- ~	۲.	۲,		· ^							- ~		•	· ·		-

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SMING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

	-		0.58 0.72																										\$7.5					_								•	Ī		
17.	1	¥.	0.11		0.22 1.											•													0.65 5.69					_						_			_		
MATER (UC	100	5	*0°0 >	•	0.08	•		0.26	0.32	0.34	0.43	0.11	600	•	0.10	•	0.14	• ;	0.16		61.0	90.0		90	•	0.04	•	*D.D	0.25	•	0.11			0.45	•	90°0	• 3	0.03	• 8	50.0	• 6	ì .	0.0	•	
DOT IN	000	,	0.16	•	64.0	•		1.59	2.95	2.64	2.83	0.63	0.36	•	0.46	•	0.63	•	0.66		5	•	•	0.16	•	0.14	• ;	*I *O	. 80	•	0.78	• =		3, 13	•	0.49	• (	2 <b>6</b> 30		793		•	0.17	•	
IONS OF		1	0.0	•	0.28	•		16.0	1.20	1.12	1.21	0.36	0.27	•	0.30	•	0.43	•	0.45	• ?	•	, y		0.14	•	0.12	•	0.12	0.64	•	0.33			1.14	•	0.21	• .	\$1.00	.;	0.13	• 6	•	0.10	•	
ENTRAT	TOC		0.22		-			1.18	2 - 74	3.16	3.00	98.0	0.37	•	8	•	49.0	•	1.01		6	.0		8	•	0,15	•	0.16	2.25	•	0.46	• •	• • • • • • • • • • • • • • • • • • • •	<b>X</b>	•	7°	• (	0° 32	• ?	2 2		•	0.11	•	
NO3		2	< 0.10	•	< 0.07	•		0.11	0.20	0.13	0.15	\$ 0°0 ×	< 0.01	•	0.04	•	9000	•	90.0	• ?	000	.0.		, 0°0 >	•	< 0.02	•	10.0	0.03	•	< 0.05	•	600	4 0°0 ×	•	< 0.05	•	90.0	• .	2.5	•	•	0.0	•	
	0.450	7	13.0		0.1 > ;	•		0.5	, the O	*	0.6	2.0	3.0	1.0	2.0	3.0	4-0	200	0.4	2	0			2.0	4	2.0	3.0	0.1	0 0	•	17.0		000	26.0	•	25.0	•	7**	•	0.61		;	0 11 0	•	
105	ion sos	)	33.0 9.0	O	9.0	٠		0-0 24-0	0 22 0	0.0 24.0	0.0 23.0	0 10.0	9.0	9.0 8.0	0.0	0.6	.0 10.0	8 0	0.01						0.0	0.0	0.1	0 0	7 0 7	10.0	.0 20.0	0		20 11.	• 0•1	.0 15.	0.0	- (	50.0	- - (	2 6		1.0 16.	•	
10S	אסר פר	:		71.0 35				55-0 110	7.0 84	35.0 100	35.0 95	74 7.6	55.00 25	54.0 29	56°0 35	0.01	37.0 44	78.00	94	3 5		2 4	24.0	46.0 31	9.1	36.0 51	51.0 82	85.0 18	18.0	-	-	20°02	301	19.0 120	30.0		3	•	× :		9	1.0	1.0	de si	
75.0	sus	ر ا ا	) (	3.0	0.0	) <b>•</b> (		3.0	( E	2.1	4.2	0.8	0.12	0.,	0.1	0.6	0°1×	3.7	0.1	3 6	2	2 9	2		20	0	×1.0	۰	0 0	80	91	= {		2	3.0	<b>0.1</b> × 1.0	0.1	<b>61.0</b>	<b></b>	0.17	22.00	/ ¥	77	9.0 ,	
	•		67-149	07-161	6	0		9	6 E	07-15	S-11	6M-12	6M-58	6H-39	3	OM-41	¥-1.0	3	**- EO	8	0 4	1 1 1	9 4	24 - 50	3	Ş	Ş.	0M-54	67-55	59	67-22	67-23	67-75	67-26	67-27	67-28	67-29	67-30	67-31	01-36	67-10	67-69	67-90	16-19	
			1113 1-40	•	14 7 1-46	3997 746		1000			^				30 1-40	30	() m		2	30 057		<b>.</b>		1501 1-40				1602 1-40	02 0-60	1504 0.60	-	153 0.6C					1132 C-6C			~ <			~	35	
	END ING		31 MA980 11	31MAK80 11	3APK BO 10	APREC 10	CENTERLIN	: _		JA180	JANEO	1 08 N	0	1480	JAN80					23.44.80 /	٠,					_			25JANBO 16			~	1 AP 80	MAR 80	8	8	စ္က	2	MAR 80	0 6		1 A 1 B 0	MARBO	MAPBO	
		1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1033	1033 3			9.4	1428	-	8	5	-	1910 22									1110 24	<b>1 2 3 3 3 3 3 3 3 3 3 3</b>	1446 24	1446 24	1034 25	1034 25	1541 25	1541 25	1400 17	1730 17	1736 17	55 18	15.	~	8	٦.	٦.	1723 18	٠.	٦,		~	~	•
	BEGINNING	1 CALET	2 SMARGO	31MAK60	3 APR 90	34 PREC	AN CREEK	Q Z		B JANBO				0		22JANGO	ZZZZWBC	SUANEO	SJANBO	23 LANGO	Canada Co	24.1ANSG	ONAL A	24-JAN50	4 JANBO				SJANG THARK	7MAR80	7MAR80	THARBO	<i>,</i> $\alpha$	BMARHO	BMARBO	80	BMARBO	OR MANUEL	SMAKED	NA KAN	ON A MA	SMAR BO	9MAR 60		
		Z	- r-				Indi			2		•	9																۷ - ۰ -	_	_	~ -	. ~		7	~	_ ^	٠.			7	_	_	_	

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOF CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

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#### TASK6 - ASSESSMENT OF DOT TRANSPORT - HYOROLOGIC AND SEDIMENT DATA

	E 00	MAX	•	•	•	0.25	•	0.61	•	0.39	•	•	•	0.24	•	0.13	•	2.0	•	0.21	•	0.69	•
	TOTAL	MIN	•	•	•	0-14	•	0.55	•	0.32	•	•	•	00.00	•	0.02	•	900	•	0.16	•	0.65	•
106/L)-		4.4	•	•	•	0.03	•	0.07	•	0.0	•	•	•	0.03	•	0.02	•	0.03	•	0.03	•	0.11	•
ATER (U	8	4.0	•	•	•	< 0.02	•	0.02	•	0.02	•	•	•	0.02 <	•	0.01	•	2000	•	0.02	•	0.04	•
FRACTIO	9	4	•	•	•	9000	•	0.10	•	0.11	•	•	•	0.03	•	2000	•	603	•	0.05	•	0.25	•
		٥, ٥	•	•	•	0.0	•	0.0	•	0	•	•	•	0.0	•	0°0 >	•	0.0	•	0.0	•	0.14	•
-CONCENTRATIONS OF	01	<u>م</u>	•	•	•	< 0.05	•	0.32	•	0.12	•	•	•	< 0.07	•	<b>*0°0 ×</b>	•	< 0.05	•	9	•	0.12	•
CONC	9	0. P P.P	•	٠	•	40°0 ×	•	<b>*0.0 ×</b>	•	< 0.05	•	•	•	< 0.05	•	< 0.03	•	40°0 >	•	× 0.0 ×	•	+0°0 >	•
	0.450	1			•	10.0	•															2.0	
J F	VOL	-1 #G A	•	15.0	•	0 16.0	•	16.0	•	15.0	٠	15.0			•	14.0	•	7.0	•	8.0	•	8.0	•
SOC 10	SS		38.0	30.0	32.0	31.0	27.0	24.0	24.0	22.0	29.0	78.0	85.0	63.0	58.0	26.0	24.0	23.0	19.0	23.0	28.0	21.0	17.0
1 1	NO.	2	0.1 >	3.0	3.0	9	•	0.8	0.	•	87.0	3.0	•	0.6	0.04	12.0	•	3.0	29.0	•	0.09	25.0	•
UE 9<	SUS	(H62)	80	6	120	23	120	2.0	86	0.1×	0.1	3.0	¢1.0	1.0	5.0	0.1	0.10	2.0	1.0	\$ \$	0.1	0.	<b>0.1</b> × 1.0
		LABID	67-93	67-94	67-95	67-96	16-19	67-98	64-19	67-100	67-101	67-128	67-159	67-130	67-131	67-150	67-151	67-152	67-153	67-164	67-165	67-166	07-167
		FOC	20.0	7-1			0.6C	31-40	39.0	1-4C	29.0		0.6€		1 0.6C		0.60	747	0.6C	1-40	0.60	1+C	79.0
	9	DAT E-TIME	061 0	0 205	602 0	0 659	659 0	0 1433	0 1433	0 1859	0 1859	1014	101 0	1143	0 1143	0 1130	0 1130	0 1112	0 1112	0 1309	0 139 9	0 1025	102
	ENDING	DATE	19MAR 80 1900	<b>20MAR80</b>	20MAR 80	20MAR 60	20 MAR 80	20 MAR 80	20MAR80	20 MAR 80	<b>20MAR 80</b>	234AR80	23MAR 80	24MAR 80	24MAR 80	26MAR 80	26MARBO	28 MAR 80	28M AR 80	31MAR 80	31 MAR 60	3APR80	3A PR 80
	9414	1 14E	1833	140	140	630	630	1400	1400	1840	1840	953	953	1110	1110	1100	1100	1030	1030	1230	1230	00°	1000
	RAIN BEGINNING	EVENT DATE-TIME	7 19MAR80	7 ZOMAREO	7 ZOMAREO	7 ZOMARBC	7 ZOMARBO	7 ZOMAREO	7 ZOMARBO	7 20MAR60	1 20MARSC	7 Z3MAREO	7 23MARBO	7 Z+MARBC	7 24MAK60	7 26MAN30	7 ZOMARSO	7 28MAR 60	7 ZEMAREG	7 31MRB0	7 SIMAKED	7 3APRBC	7 SAPKEC
	æ	ш																					

MAXIMUM TOTAL DDTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO.
MAXIMUM TOTAL DDTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.
SUSPENDE: SOLIDS, <63U — 'OMFILTERABLE RESIDUE WHICH PASSED THROUGH A 63UM SIEVE BUT WAS RETAINED ON A GLASS FIBER FILTER PAD.
VOLITLE SOLIDS, <63U — VOLATILE SUSPENDED SOLIDS RETAINED ON A GLASS FIBER FILTER PAD.
VOLATILE SOLIDS.
VOLATILE SOLIDS.
VOLATILE SOLIDS BUT WAS RETAINED ON A O.45UM MEMBRANE FILTER.
HLOC — MCAIZONTAL LOCATION:
1—4C — REFERS TO A COMPOSITE SAMPLE OF DEPTHS I THRU 4 AND HORIZONTAL LOCATIONS LEFT, MIDDLE, AND RIGHT.

C.6. — REFERS TO A COMPOSITE SAMPLE OF HORIZONTAL LOCATIONS LEFT, MIDDLE AND RIGHT AT 0.6 OF THE DEPTH.

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND NATERS WHEELER RESERVUIR, ALABAMA

TASK6 - ASSESSMENT OF UDT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

NDING SUS VOL SUS AN E-TIME HLOC LANDO (MG/L) (\$)	SUS VOL SUS VOL MG/L) (\$)	SUS VOL	30S 30S (\$)	5-1	Sus	S I	-46 3U- VGL (A6A)	1154.0	CONC EN	TAAT I	SSOLVED	FRACTION W	ATER (U	1 UG/L)	TOTAL	DOTR
					•				<u>.</u>		•		;	•		
0		00 KC	A	ر د د	4	0.0	0.45	4	80	2	90	1-41	, 1 ¢	10.21	3.24	3, 26
1637		, U	*1-H	4.0	0.00	91.0	23.0	0.0	01.0	0.12	1.1	1.50	0.15	0.24	3.22	3-22
2 5 1 4 3 1	,	-41	6H-03	9.1	67.0	80.0	22.0	4.0	0.14	90.0	1.03	1.84	0.16	0.24	3.49	\$
7 2	~	7 7	6M-15	2.	35.0	68.0	19.0	0	90.0	80.0	46.0	1.41	0.13	0.21	2 -83	2.83
507	i.	٠ <del>٠</del>	01-E0	•	000	0.00	19.0	0.0	90.0	9 6	1.02	1.40	0.15	\$2.0	3 -0 6	3.00
~ ~	<u>.</u>	ه د د ا	17-HQ	4.0	25.0	0.04	0.61	0 0	0.0	0.0	100	1.47	51.0	0 0	28.2	70.0
2112		0.60	54-57	2.0	28.0	210	11.0	2.0				1				
3.6	1	74-	5M-58	13	7.5	52.0	12.0	•	0.02	8	0.25	0.47	0.05	90.0	06.0	8
380	å	79.	6M-59	3.0	24.0	57.0	11.0	4.0	•	•	•	•	•	•	•	•
445 1	۵	-40	09-H9	3.0	25 °0	24.0	11.0	0.6	0.02	0.04	0.34	0.51	0.05	60.0	1 •05	1.05
44.5	. ق	9	5M-61	3.0	27.0	52.0	11.0	0.8	٠	• ;	•	• ;	• ?	• ;	•	• .
200	ے ہا	1-4-	79-mg	) c	236		3 0	13.0	0.03	3	0.38	0.65	90	0.10	97•1	1.60
	: 1	1-40	0 - H-0	0	19.0		11.0	0.0	0-0	0.0	0.21	0.30	•0•0	.00	0.64	
1130	ď	9 79 0	6M-65	3.0	24.0	9	8.0	7.0	•	•	•		•		•	•
1025	Ĺ	Ų	99 149	<b>1.</b> 0	21.0		14.0	2.0	< 0.02 <	0.03	0.11	0.17	0.02	0.02	0.32	0.37
1025	6	9 79	19-110	<1.0	65.0		7.0	0.4	•	•	•	•		•	•	•
\$	Ţ	140	5 M - 6 85	<1.0	34.0	22.0	0 •	1.0	< 0.02 <	0.03	0.14	0.19	0.02	0.03	0.38	0.43
1404	å.	300	69-15	0.1	0.69	20.0	7.0	2.0	•	•	•	• !	•	• ;	•	•
931	۵,	٥ ٢	0H-10	2.0	9.6	23.0	7.0	7.0	0.03	8	0.49	0.10	0.07	0-11	1.40	?
	5 -	990	12-49	0.10	26.0	2000	V 0 0	0.0		• 6		96.0	• 6		76.0	. 76
1435 0	٠.		5H-73	0.1	38.0	20-0	9	200	•	·	•	;		<b>}</b> .		
1505	۱.	1-40	57-34	8	35.0	0.0	16.0	11.0	0.03	•	0.56	0.87	900	0.12	1.60	1.67
500	å.	9	67-35	0.9	30.0	74.0	•	•	• ;	•	•	• ;	•	• ;	• 3	
8091	١,	0 ·	67-36	0	0.45	2.0	16.0	13.0	0.03	0	94.0	0 <b>.</b> 82	800	0.11	1.59	1.59
	-	34	15-14		3 6	0 0		. 6		. 2	. 6	• 6	.0.0	. [	1.17	1.37
1805	ď		61-39	3.0	7.	0	•		•	•		•	•			•
2100	<u>ب</u>		27-40	0.9	33.0	85.0	16.0	28.0	0.02	90.0	0.28	0.48	0.0	90.0	16-0	0.97
17MAR80 2100 0.	<u>.</u>		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 0	0000	200	• 4	•							. 5	
2400		9.66	57-43	2.0	22.0	96			•	<b>.</b>			3.			
210	÷		67-44	2.0	26.0	84.0	16.0	17.0	0.02	0.07	0.26	0.4	90.0	8.0	2.0	
210 0	ė.		67-45	£1	97.0	71.0	•	•	•	•	•	•	•	•	•	•
- (	÷.		97-19	3.0	30.0	82.0	15.0	19.0	0.02	0.08	0.23	0.40	0.05	0.08	98.0	3
455 0	ď-	100	19-10	0 0	0 0	120				. 8		• 6	. 6	• 5	. 5	
9		ب ب	04-6	2	2	7.00	?		7000	3	87.0	•				
90 810	_	ب ا	67-50	12	21.0	0.49	15.0	21.0	0.0	0.10	0.23	0.45	90	90	0.92	0.92
8		9.	57-51	22	25.0	0.49	•	•	•	•	•	•	•	•	•	•
103	0	. ر	57-52	3.0	0.7	63.0	13.0	29.0	< 0.02	0.05	0.30	0.51	8.0	o• 13	1.03	3
203		ر د و	67-53	0 6	Q (	9:			•		.;	.;		. ?	.;	
1 -		ייייייייייייייייייייייייייייייייייייי	\$ C - C Y	9		200	70.0	0.17	7000	50.0	0.66	6.3	600	0.0	<b>7</b> .	
PO 1326		• •	2-1-2	7.0	0.00	56.0	12.0	18.0	< 0.02 <	0.03	0.22	0.34	0.05	0.0	99.0	6.73
		•		,		) } }	, ,	,		,	:		,	, ) )	) )	:

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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DOT TRANSPORT - HYDROLDGIC AND SEDIMENT DATA

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	200 A 1		**	. 6	•	•	•	0.53		0.03	0.42	•	200	•	R	•	•	0.22	;	0.38	•	0.40	•	0.33	•	0.55	•			22.0	3		0.22	•	11.0	- 6	•	0.12	0.13		0.11		•	0.0
	TOTAL		0.49	. 0	•	•	•	0.51	. ;		04.0	•	0.24	•	62.0	•	•	0.20	}	0.33	•	0.35	•	0.28	•	3	•		•	0.18	7 7 7	; .	0.15	•	0.03	.0.0		*0-0	0.05	•	0.03		•	0.01
E/L)-		È.	0.05	.00		•	•	8		5	0-03	•	0.03	•	0.03	•	•	60	} .	0	•	8	•	0.02	•	0.0	•		,	0.0		•	10.0	• .	10.0	• 0		10-0	10.0	•	0.01		**	10.0
IATER (L	9	•	40	9		•	•	ક		*	0.03	•	0.03	•	0.03	•	•	• 0		0-02	•	0.03	•	0.02	•	0	•			0.01	70.0	•	0.01	•	0.01	.00		0.00	10.0	•	0.01	. 0.0	•	0.03
DOT IN Y	00		0.25			•	•	<b>6.24</b>		*7*0	0.19	•	0.11	• ;	21.0	•	•	• 6	;	0.17	•	0.17	•	o. 15	•	0° 52	•			11.0		•	0.12	• .	66	.0.0	•	0.04	0.05	•	0.03	.0.0	•	0.01
ONS OF	1	•	0.15	41.0	•	•	•	0.15		61.0	0.11	•	0.05	•	0.07	•	•	0,0		0.10	•	0.11	•	0.00	•	0.17	•		1	0.03		•	0.03	•	10.0 >	. 6	•	< 0.01	< 0.01	•	< 0.0 >		•	< 0.01
ENTRATI		•	< 0.8	.0.0	•	•	•	0.03	• 6	< 0.03	.0	•	•	•	< 0.03	•	•	• •		< 0.03	•	< 0.03	•	< 0.03	•	°0°	•		1	60.0	3 6	•	< 0.03	•	< 0.03	0.03		< 0-03	< 0.03	•	< 0.03	.0.	3	< 0.03
CONC		•	< 0.02	0.0 >	•	•	•	< 0.02	•	70.0	< 0.02	•	0.02	•	× 0.02	•	•	.0.0	•	< 0.02	•	< 0.02	•	< 0.02	•	20°0 >	•		1	0.03		•	< 0.02	•	20.0 >	0.03	•	< 0.02	< 0.02	•	< 0.02	,0,0,	•	< 0.02
	0.45U	•	18.0	16.0	•	7.0	•	••	• ,	9	•	•	51.0	• 9	0.	• •	•	27.0		15.0	•	0.9	•	13.0	• ;	2.0	•		•	) c		0.9	7.0	7.0	•	•	2.0	0-1	2.0	2.0	1.0	0 -1 ~ ~ 1 • 0	,	7.€?
	707		12.0	10.0		17.0	•	16.0	• ;	• •	14.0	•	16.0	•	0.41	• •	•	16.0		7.0	•	0.8	•	8.0	• 1	•	•		,	25.0		14.0	10.0	0.6	0 0	0 0		0	9.0	0.9	0.9	20.0		19.0
50110	Sus	3	52.0		52.0	37.0	39.0	30.0	31.0	2,40	24.0	27.0	92.0	110.0	0.00		2 4	62,0	,	24.0	32.0	21.0	21.0	18.0	18.0	17.0	15.0			120.0	7 4	78.0	51.0	45.0	37.0	17.0	10.0	16-0	0	17.0	16.0	140.0	150.0	120.0
ٳؘ	70.	•	< 1°0	94.		•	9	•	0 0 0 1			•	3.0	38.0	0.62	• •	0	•	٠.	•	20.0	•	•	•	0.8	0 6	0.02			9 4	21.0	26.0	23°C	26.0	21.0	23.0	37.0	21.5	34.0	36 2	56.0	22.0	0	0.48
F9	SUS	(1°0)	1.0	01°	¢1.0	¢1.0	1.0	<b>61.</b> 0	0 0	) C	0-17	<1.0	3.0	0	• ;		0 0	200	0.15	20	1.0	<b>0°1</b> ×	0.15	×1.0	0.4	0 °	0			77	•	£	7.0	0.	0 0	0 0	2.0	9	3.0	0.0	0.4	0°1>	1 5	102
•	C 1 8 4 -	67-57	67-58	67-59	67.61	67-102	67-103	67-104	67-105	001-10	67-168	601-19	67-132	67-133	67-134	44-137	001-10	67-138	67-139	67-154	67-155	67-156	67-157	67-168	e7-169	67-170	67-171	6		81-18	72-WY	6M-75	6M-76	7-1-5	8/- W9	) I I I	6H-81	6M-82	64-63	94-m9	€ - HO	6M-86	79-79	67-04
	3			9.9					_			0.6	-	9.0	1		<b>→</b> C	·	. 0	1-4			_	_	0	<u>.</u>	0.00	;		٠,	ب ر پ	9	7	9	ب د	ب ر 4 0	9	7	7	99.	7	9 4	1	1
	•	32	155	1551	9	103	103	182			1755				7 7	,	22	- ١	145	3	240	141	141	-	153	Š	1156	,	. :	֝֝֓֞֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֡֓֓֓֓֓֡֓֓֡֓֡֓֡֓	1850	1850	215	215	6 1.0		93.5	11117	F17	617 0			12,	3
	END ING	184AR 80	18MAR80	18MAR 50	18 MAR 80	194AR80	19MARBO	19 MAR 80	19MAR 80	SOMEN BO	20 MAR 80	an a	214AR80	21 MAR 80	ZZMAKBU	72 MAR 50	COMMAN OF	25 MAR 80	24MAR 80	26 M AR 80	26 MAR 80	1 A	28 MAR 80	31 MAR 60	3 IMAR 60	ž (	3478	•	KANCH >.	16 JANEO	22.1 AN 10	22 JANBO	23 J A 14 BO	SAJANBO	COUNTRO	24.14%B0	2 JAN 80	24.JANBC	PAND	25 JANEO	3740	25JAN80 17mapr		4 A 8
	ING		1530	1530	1747	1002	1002	1802	1802		1740	1740	1030		3 6		1206	1410	1410	1324	1324	1343	1343	1503	1503	1135	1135	•	20 (	3316				145				م	25		1509	1309	1130	31.
	BEGINA PATE-T	MARSO		SMAREO	BMAREO	9MAR60	9MAR80	SPEAR 80	9#4 R 80			_	_		22MAN 80			24MAR80		<b>BMARBO</b>	26MAR80	BMARBC	8 FER 80	1 MAR BO	LMAR 80	Ď	3APR80		LLE SYKING	002450	2.14 N.E.O		3JANEC	23JANBO	SJANCO	STANCE	4.JA78C		22	JANB	SJANEO	ひとくして	4	MARC
	RAIN			- ^	•	_		<del></del>																				:	֡֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞	~ -	•									~	M.	~ ~	4	

ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INCIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

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TASKA - ASSESSMENT OF BOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

									SOLIDS			CONC ENTR	ENTRAT	96	NI LOO	IATER (U	(UG/L)		
N A	3	7	ž				2697	1 2 2	2	À S	4		7	I SSULVED				TOTAL	9100
E VEN 1	UA TE-1	7	DAIE-T	7 14E	9	LASID	146/L	3	3	704	3	ט פֿי	9	0.0	9.9	9.0	9.0	1 Z	X
	PMAREO	1330	74AR	44	J	67-65	2	21.0	110.0	•	•			•	•	•	•	•	
_	PMARBO	1445	7 4 A A	154	_	~	16	41.0	92.0	18.0	14.0	< 0.02	< 0.03	< 0.01	0.02	0.01	10.0	0.02	01.0
_	7MAR80	1445	74AR	154	0	19-19	7.0	32.0	•	•	•	•	•	•	•	•	•	•	•
_	PMARBO	1715	4 M K	3	_	99-69	2	15.0	•	15.0	29.0	< 0.02	< 0.03	< 0.01	0.01	0.01	0.01	0.01	60.0
<b>~</b>	MAREC	1715	7	38.	•	<b>~</b>	2	0.87	•	•	•	•	•	•	•	•	•	•	•
~ ~	74ARPO	2140	174AR 80	2152	9 4	67-70	•	23.0	73.0	16.0	18.0	< 0.02	< 0.03	< 0°0 >	0.01	> 10°0	0.01	000	60.0
-		1726	K 4	2	, -		0 4	v r		• •	• :		•		. ?	•	•		. 5
• •	MARGO	1235		131		67-73	9 0	200		2		7000	50.0	1000	5				5
•	MARGO	1720	BAR	180	_	67-74	0	•		11.0	.0.8	< 0.02	< 0.03	< 0.01	0.02	0.01	0.0	0.02	01.0
-	78 C	1720	BMAR	180		67-75	\ \ \ \	•	39.0	•	•	•	•	•	•	•			•
~	SMAR 60	918	PHAP	5	_	67-76	0.	26.0		10.0	2.0	< 0.02	8°0 ×	< 0.01	00	0.01	0.0	0.02	800
_	SMAR BO	916	9 HAR	101	0	$\sim$	<1.0	•	29.0	•	•	•	•	•	•	•	•	•	•
_	9MAR80		194AR80	174	_	67-78	1.0	51.0	23.0	10.0	1:0	< 0.02	< 0.03	< 0.0 >	0.02 <	0.01	0.01	0.02	0.10
	ဒ္ဌ		19MAR 60	174	0	•	2.0	32.0	30.0	•	•	•	•	•	•	•	•	•	•
	<u></u>		ZOMAR SO	123	_	•	<b>7</b>	0 e	220.0	31.0	35.0	•	•	•	•	•	•	•	•
	9		20MAR BO	123	٠,	- 1	2.0	16.0	210.0	•	• (	•	•	•	•	•	•	•	
	ZOMARBO	1705	ZOMAR BO	172	- (		91	73.0	160.0	21.0	45.0	< 0.02	< 0.03	< 0.0	> 20°0	0.01	0.01	0.02	01.0
	2 9		SUMMAR BU	7 :		6	<u>.</u>	2.4	000	• ;	• ;	•		• 6			.;	.;	. ?
	2 4		ZIMAKBO	<u> </u>		3	0.1.	• :	110.0	15.0	24.0	20°0 >	< 0.03	< 0.01	V 10.0	0.01	10-0	10.0	60.0
	9		21 M AR 60	101		5	0.1	9	1 20 00	•	• ;	•	•	•	•	•	•	•	•
	و و		ZZMARBO	2		9	9	0 · 1	0.14	15.0	22.0	•	•	•	•	•	•	•	•
	2 9	0601	ZZMARBO	91	0.0	141-10	2.0	0.	9 0	• 5	• ;	• (	•		• 3		• 6	.;	
	2		ZAMAR BU	200		3 !		•	0.67	12.0	7.00	70°0 >	\$0.0	10.0	70.0	7 10.0	10.0	70.0	01.0
	2 9	۸.	24 HAR 50	2 :		67-143	0:	•;	28.0	• 3	•			• .	. ?				.;
		2 5	2000		- (	6	* :	2	0.00	•	10.0	× 0.02	60.0	10.0	50.0	10.0	10.0	500	11.5
			20 44 40 5	1 2 2	-	77-10	9 (	3 6	2 6		• ;			• 6	. ?	. ?	•		٥.
	2 4		2 RM AP BO	7 .	- 0	3		2	2			40.0	3	100	3				}
	9 9		31 MAR BO	35	,	3		24.0		. «	ر ا	0.07	6.0	ָּ ס-ָּס	0.07	.0.0	10-0	0.02	0.00
	8	1458	31 MAR 80	151		5		15.0	18	•	•	•	•	•	•	•	•	•	
	80		3 APR 80	133	_	67-172	0	34.0	~	8.0	12.0	< 0.02	\$ 0° 0	0.02	0°0	000	20.0	90.0	9. 14
	APR BO	1258	*	133	U	67-173	11	22.0	30.0	•	•	•	•	•	•	•	•	•	•
INDIAN	N CREEK	•	2	ROAD															
	JANSO	*	280	102		61-N9	13	41.0	100.0	0.04	0.9	< 0.03	< 0.03	< 0.02	0.03	0.01	0.01	0.03	0.13
7	JANBO		18JAN80	154		•	4.0		54.0	18.0	2.0	0.03	0.03	0.41	0.84	0.10	0.11	1.52	1.52
-	6JANBO		Ξ	200		3	0.5	71.0	0.47	٠	<b>5°0</b>	0.05	8	0.85	1.31	0.15	8.0	2.60	<b>%</b> .2
-	JANBO		Ž.	233		•	0:	28.0	57.0	•	3.0	0.15	0.07	0.73	1.37	0.17	6.13	29.2	7.62
	OBNALG		3	20		3	1.0	0.19	63.0		ď	90.0	0.01	0.36	7	0.17	0-24	2.39	2.39
			z.	162		Φ	0.5	53.0	54.0	18.0	0.	4000	0.0	0.41	890	0.15	0.25	1.58	1.58
			22.3 ANB 0	\$		•	٥. 1.0	64.0	28.0	•	1:0	< 0.02	< 0.03	0.22	<b>\$</b>	<b>0°</b> 0	0.0	0.10	0.75
			ξ.	194		ð	¢1.0	23.0	30.0	0	0.1		•	•	•	•	•	•	
			3	2		ø	<b>1.</b> 0	64.0	•	0	0.1	0.0	60.0	0.57	0.85	60.0	0.13	1.77	1.11
			3	<u>۾</u>		ø	٥ <del>.</del>	51.0	31.0		~		•	•	•	•	•	•	•
	14480		Z,	5		•	0 7			-	0.	0.03	0.03	0.50	0.92	0.0	0-12	1.69	1.69
6 K	74 750	740	23 JAN80	230	3	C :	<b>0</b> 0	000	23.0	0 0	e 6		•		• ;	• ?	• 3	• {	
	09246		ζ,			Ō,	0.7	0.76	•	0.0	0 (	< 0.02	< 0.03	0.30	0.50	0.0	0.00		ç
			?	•		•		13.0	32.0	10.0	0.7	•	•	•	•	•	•	•	•

# ENGINERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

												<b>∢</b>										2	E E											2	!										
	5	X	1.17	•	8	0.92		0.41	•	0.35	•	1.56	. 5	}	2 - 19	•	1.70	•	*	• !	1.1	. 8	•		•	0.92	•	•	•	•	0.71	•	0.73			0.26	•	0.28	• {	77.0		•	0.31	•	<b>\$</b>
	101	N N	1.17	•	90	70		0-36	•	0.30	• .	1.58	. 5		2.19	•	1.70	•	1.34	• :	1.15			\$	•	0.92	•	•	•	•	0.66	•	0.68		•	0.21	•	0.23	• ;	77.0			0.29	•	62.0
-179		9.	800	• 3	0.05	0.07	•	0.03	•	0.03	• ;	0.13			0.23	•	0.18	•	0.13	.;	71.0			0.10	•	90.0	•	•	•	•	.0		0.07	0.05		0.03	•	0.02	• 3	70.	6	} •	0.0	• ;	60.0
ATER (U		0.6	900	• ;	0.03	0.05		0.02	•	0.02	•	0.10	• 6		0.12	•	0.10	•	0.0	.;	80.0	• 6		0.0	•	0.05	•	•	•	•	.90	•	0.05	.0.0	•	0.01	•	0.02	• 3	70.0	40.0	<b>.</b>	2000	• ;	20°0
N II TO	FIXET IS	9.0	0.62	• ;	8	648	•	0.22	•	0.15	•	68.0		;	1.17	•	0.89	• ;	0.13	• ;	1000		3	0.51		0.48	•	•	•	•	C-37	•	0.37	04.0	•	0.11	•	<b>6.13</b>	.;	71.0	.0	<u>,</u>	0.14	•	91.0
NS OF D	SCAPE	9.0	0.34	•	0.21	0.27	•	0 0	•	0.10	•	44.0		} •	0.56	•	0.45	•	0 • 3 5	.;	0.31			0.27	•	0.24	•	•	•	•	0-19		0.1%	.16	•	90.0	•	90.0	. ;	000	٠,٠		60.0	•	an.
NTR AT 10		4	0.0	•	0.03	0.03	•	0.03	•	0.03	•	•	•	•	8	•	8	• ;	0.03	•	50.0	•	. •	0.03	•	0.05	•	•	•	•	0.03	•	8			0.03	•	0.03	. ?	60.	.0	} .	0.01		5.
-CONC.		•	0.03	•	> 20°0	0.02	•	0.02 <	•	0.02	• '	20.0			0.03	•	0.03	•	0.02		70.0	. 6	•	0.02	•	0.02	•	•	•	•	ري • 0	•	0.02	0.02		0.02 <	•	0.02 <		70.0	0.0		0.01		70.0
1	104	2	3.0	• •	0 0	0,0	•	200	4.0	9.0	9.0	0.0			22.0	•	35.0	•	25.0	• ?	2007			19.0	•	16.0	•	14.0	• :	0.11	•••	•	<b>°</b>	2.0		27.0 <	•	15.0	•;		33.0	•	> 0.5	•	20.
	÷ Š	79	0.0	0.6	0 0	0.0	0.0	7.0	8.0	8.0	0	0.4	•		3.0	•	0.8	•	0.9	•	0 •			0.4	•	11.0	•	0.0	•	0.0	12.0		0.0	•	•	11.0	•	3.0	• ;	0.7	0,0	•	0.91	•	· •
SOL 10S-	=	3	\$	41.0	32.0	33.0	32.0	30.0	24.0	25.0	26.0	79.0		95.0	160.0	170.0	120.0 1	110.0	63.0	0.4			52.0	52.0	51.0	44.0	47.0	0.04	45.0	0 0	40.0	37.0	34.0	28.0	20.02	53°C	63.0	580			200	35.0	25.0 1	23.0	39.0
	ا چ	<b>X</b>	21.0	26.0	0.01	31.0	53.0	2400	8 6	0.44	2	24.0	2 6	0.5	23.0	23.0	31.0	65.0	•	•	•	•	• •	•	•	•	•	•	0	9 0	9	0.1	2 .	0.4	75.0	•	•	0.11	36.0	•	•	1.0	•	•	2.50
	DE 94-	467)	<1.0	0.1	0. V (	200	<b>1.</b> 0	0° T>	0.0	<b>61.</b> 0	0.1	0 0	3 9	0	9	0.6	2.0	0.0	0.0	o (			0-17	<b>61.</b> 0	<1.0 <1.0	<1.0	0.12	20	80	9.6		99	18		0.7	<1.0	<1.0	5°0	٥ ٩ ٢			1.0	<1.0	0.1.	) C
•	•			3	0 F   10 P   10	3	3	ŧ	Ž		5	67-61	707	67.0	67-05		5		6	01-10						67			3	58-19 7-85		67	67-116	67-116	61-19	67-120	171-19	67-122	671-10	*71-10	97-19	٠,	67-148	67-149	67-160
		T CO	7	0.60	1	1	29.0	1-40					,		_															֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓			1-40	0°-0	0.60	1-40	٥ <b>.</b> ه	7-40		ָ קריים קריים	?	0.6	4	0.60	1-4C 0.6C
			2	120	1235	164	164	~	~	-	-		-	-				•	⊸ .	٠,		•				_	,	~	-				131	1313	172	115	115	25	701	115		=======================================	2	601	1113
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# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVDIR, ALABAMA

TASKO - ASSESSMENT OF DUT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

						• •	) 6 3 ·		SOL 10 S	1 2 4		CONCENTR	ENTRAT I	DNS OF D	FRACTION W	ATER (U	(U6/L)		
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- 1	SAPREC	1001	3AP480 10+7	10401	1	67-162	9 .	9 :	2000	8.0	J.0	20°0 >	< 0°03	0.11	÷.	0.02	8	0.36	7
	SAPKE	3	34 PK 50	5	0.60	67-163	1.0	73.0	21.0	•	•	•	•	•	•	•	•	•	•
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5	AN CRE	¥.	CENTE	RL IN S			,	•			•			•	;	•		;	;
n v	DONALO		18JANSO	757	1	000	9 6	62.0	0.011	24.0	o (	90.0	60.0	0.94	1.54	0.15	0.23	1000	3.01
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	23 JANB	00+	23.JAN 80	4		71 49	0.1>	37.0	1	10.0	•	0.03	8	0.51	0.77	0.0	0.13	1.57	1.57
	23 JA NB (	ĝ	23 JAN60		0.6	E 9- 15	0.	78.0	0.64	0.8	, v	•	•	•	•	•	•	•	
	23.JAN80	710	•		1-40	6H-44	<1.0	44	48.0	0.01	••	0.03	0.0	0.34	0.63	0.07	0.10	1.21	1.21
	23 JANGI	110	23 J ANBO			CM-45	0° T>	95 0	6.0	9.0	•	•	•	•	•	•	•	•	•
	23JAN8(		23JAN80	1110		91 19	<b>0.1</b>	0.1	63.0	8.0	0.0	0.03	0.04	64.0	9.76	0.08	0.16	1.56	\$.
	23 JAN8 (		23 JAN 80	1116		2 TH9	ر م م	67.0	51.0	8.0	0.9	•	•	•	•	•	•	•	•
	SAJAN90	1110	24JAN80	~	1-40	84.	°.	96 o	26.0	0.9	<b>;</b>	0.02	9	0.37	0.58	90.0	0.10	1.16	9.
	2 ANE	1110	24 JAN80	-		67-H9	0°1	24.0	32.0	0.8	•	•	•	•	•	•	•	•	•
	ZAJANBO	9	Z4 JANBO		) - d	02 - 20 <b>3</b>	0.5	9.	31.0	0.0	0.0	20°0 >	0.93	9000	0.13	2000	0.02	0.23	97.0
	JONET -		DENNEY	٠,		16-H0	9;	<b>1.</b> 6	2 :	0.0	0	• 3	• ;	• (			• :	•:	•:
٥ ﴿	CSAMBO	1034	25JAN80	201		26-H9	0.5	96	21.0	•	0.0	0.02	0.03	0.35	0.26	8	01.0	1.12	71-1
	CHARLES	1561	25 14NB0	5 5	֓֞֝֝֝֝֝֝֝֝֝֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	7		3 0	18.0		9 6	. 0.0	. 6	25.0	• 4	, c	6.67	. e	
	25 JANB(		25JAN60	1602		68-55	9	18.0	47.0	0.0	0		} •		} .	} .			
	1 THARBO		17MAR80	1504		67-20	1.0	20.0	0.011	0.81	11.0	0.03	•	0.53	1.08	0.10	0.18	1.92	1.92
	1 THARB	1400	17MAR 60			67-21	8.0	18.0	110.0		•	•	•	•	•	•	•	•	•
	17MARB(	1730	17MAR80			67-22	2	22.0	130.0	20.0	17.0	90.0	2.38	0.87	2.40	0.21	0.49	6.41	14.0
	17MARB	1730	LTHARBO	-		67-23	1	20.0	120-0	• !	•	•	•	•	• (	• (	•	•	•
	SEA KOC		I SHAK BO		֝֝֝֝֝֝֝֝֝֝֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	47-19	0 0	2.0	3 6	0.7	33.0	0.03	0.0	14.0	76.0	•	1.0	1.04	5
_	AMAK BO	25	TOTAL SOL	736		67-75	2 5	200	3 6	. :	26.0		. 1	74.0	.00	. [	0.22	2.45	2.45
~	BMARB		16MAR BO			67-27	3.0	90.00	87.0			•	•	•	•	•		•	•
_		1100	18 MAR 80		7	67-28	۲۰ دا ه	•	0.89	0.51	22.0	20°0 >	8	0.29	0.48	90.0	0.12	\$.0	1.03
_	19MAR80		16MAR BO	1132		67-19	0.1. 0.1.	•	% 9,0	•	•	•	•	•	•	•	•	•	•
	16MAR8		BMARBO	1740		67-30	°.	•	53.0	14.0	24.0	< 0.02	<b>*</b>	0.23	0.39	0.05	80	1.09	I: 1I
-	DATA R BC		I SMAR 80	-		67-31	0.1	•	20.0	•	• ;	• ;	• ;	•	•	• ?	•	• ;	. :
	TANKE OF THE PERSON		1 SHARES	121	ָי נָ בּ	25-10	2	•	•	0.71	7.0	67.0	0.56	7 7 0	6.0	9	•	2	1.00
-	ORABO		000000			64-64	, ,	. 5				. 6	. 8	•		•	. 0	74.0	0.67
	OMAR BO	645	198 48 80	727	9	67-80	: 2	9			<b>?</b> '		}				<b>?</b>	;	;
	1 SHAR 80	_	19 HAR BO	_		9 29	21	0	41.0	0.91	11.0	< 0.02	0.03	0.22	9.42	0.05	0.11	0.83	
	STATE B	_	1 9M AR 80			16-19	6	9	9	•	•	•	٠	•	•	•	•	•	•
	PHARB	1833	19MAR BO	8	7+-1	67-92	21	1.0	37.0	17.0	10.0	•	•	•	•	•	•	•	•
	PRARB	0 1833	194AR 80	8	J. 6C	67-13	2	4 1 %	38.0	•	•	•	•	•	•	•	•	•	•
	•	Ž.	AAB	ŏ	Í	1970	61	9	90.0	15.0	•	•	•	•	•	•	•	•	•
	OHAR 9	0 140	20 M A R 80	507	٥.6	67-95	120	3.0	32.0	•	•	•	•	•	•	•	•	•	•

1.

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# ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTANINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK - ASSESSMENT OF DDT TRANSPORT - HYDROLDGIC AND SEDIMENT DATA

							Ş													
	8	ZY.	6.5	•	¥.0	•	9.6	•	•	•	0.14	•	9.20	•	0.31	•	3	•	0.52	•
	TOTAL	H	0.20	•	Ş	•	\$	•	•	•	9.0	•	0.23	•	0.26	•	0.38	•	0.47	•
3		•	\$	•	0.0	•	0.03	•	•	•	0.02	•	0.02	•	0.03	•	0.03	•	0.05	•
NTER CO	00	0	0.03	•	0.03	•	0.03	•	•	•	0.02	•	0.02	•	2000	•	0.03	•	0.03	•
TIN M	8	P. P	0.24	•	18.0	•	0.22	•	•	•	201	•	Q. 13	•	0.14	•	0.19	•	0.25	•
OF	7	4.0	*1.		-14	•	-12	•		•	40		90.		-01	•	•10	•	-14	
TRATIO		4	0.03	•	0.03	•	•	•	•	•	0.03	•	0.03	•	8	•	8	•	0.03	•
CONCENTRATIONS	00	0.0	0.02	•	0.02 <	•	0.02	•	•	•	0.02 <	•	0.02 <	•	0.02 <	•	0.02	•	> 20.0	•
	SUS VOL 0.45U	1	10.0	•	> 0.1	•	> 0.2	•	55.0	•	•	•	> 0.61	•	10.0	•	8.0	•	2.0 <	•
15.43	3	(イツエ)	0.91	•	> 0.91	•	15.0	•	0.51	•	0.11	•	0.41	•	0.2	•	8.0	•	8.0	•
SOL 105	SUS		31.0	27.0	24.0	24.0	22.0	29.0	78.0	85.0	63.0	26.0	26.0	24.0	23.0	19.0	23.0	28.0	21.0	17.0
	VOL	2					•													
7.4	Sus	「ピアリ	23	8	5.0	98	2	1.0	3.0	<b>61.0</b>		0,0	0•1	0.1>	2.0	0:1	<b>₽</b>	1.0	9.7	0.1×
		LABID	67-96	67-91	67-58	45	67-100	67-101	67-128	67-129	67-130	67-131	67-150	67-151	67-15	67-153	67-164	67-165	07-166	67-167
		TO T	1-40	3:0	1-40	9.6						0.60				0.60		0.60		
	ي	TIME	659	659	1433	1433	1859	1859				1143							_	-
	END ING	DATE-TIME	20MAR BC	20MAR B	20MAR BC	20MAR BC	20MAR BC	<b>20MAR8</b>	23 M AR BO	23 HAR 80	24 HAR 80	24MARBO	26 MAR 80	26MAR BO	28MAR80	28MAR BO	31 HAR 80	31 MAR 60	3APR 80	3A PR 80
	INC	IME	3	630	200	1400	1840	0491	953	953	1110	1110	1100	1100	1030	1030	1230	1230	1000	1000
	BEGINNIN	DATE-TIME	2 OMARS O	OMARBO	OMARBO	OMARBO	OMARBO	OMARBO	23MARU	23MAR80	24MAR80	24MAR80	26MAR80	26MARBO	SWARBO	BMARBO	IMARBO	IMARBO	3APR80	3APR 80
	RAIN	EVENT	7	~	7	7	7	7	7	7	7	7	7 2	7	7	7	7	~	_	~

A. MINIOUR TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO.

6. MAXIMUM TOTAL DOTA CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

6. SUSPENDED SOLIDS, CASU - MOMERLERABLE RESIDUE WHICH PASSED THROUGH A ASUM SIEVE BUT MAS RETAINED ON A GLASS FIBER FILTER PAD.

7. VOLITILE SOLIDS, CASU - NORATILE SUSPENDED SOLIDS RETAINED ON A GLASS FIBER FILTER PAD.

8. O.-SU, CASU - NORATINE RESIDUE WHICH PASSED THROUGH A QLASS FIBER FILTER PAD BUT WAS RETAINED ON A O.45UM MEMBRANE FILTER.

9. HIGC. - HARIZONTAL LOCATION:

1.-C. - REFERS TO A COMPOSITE SAMPLE OF DEPTHS 1 THRU 4 AND HORIZONTAL LOCATIONS LEFT, MIDDLE, AND RIGHT.

C.6D - REFERS TO A COMPOSITE SAMPLE OF MORIZONTAL LOCATIONS LEFT, MIDDLE AND RIGHT AT O.6 OF THE DEPTH.

6. NA DENOTES P.P DUT NOT ANALYZED. TOTAL DOTAL DOTAL DATA SECHEM FOR DOTAD.

# ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CKEEK, AND ADJACENT LANDS AND MATERS WHEELER RESERVOIR, ALABAMA

TASK6 - ASSESSMENT OF DOT TRANSPORT - HYDROLOGIC AND SEDIMENT DATA

DO TR	11.65	0.45	3.04 3.04 3.58 2.15	7.46
TOTAL MIN	11.65	0.45	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	7.46
J6/1 )—	95.0	0.02	0.34	0.04
O.P	643	0.03	0.19 0.27 0.28 0.28	0.35
RACTION- DD	3.80	0.18	1.43 1.66 2.11 1.85 1.03	2.65 4.28 3.16
TOTAL F	1.96	0.10	0:90 0.97 1.30 0.93 0.53	1.70
	4.10	90 • 0	0.10 0.12 0.26 0.09	2.99
CONC	0.36	42.0 19.0 < 1.0 < 0.06 < 0.06	0.00	0.20
01105	0.4	<b>1.</b> 0	N W W 4	 
188 188 187	22.0	19.0	54.0 18.0 44.0 17.0 57.0 18.0 63.0 20.0 54.0 18.0	24.0 22.0 24.0
SOLIE	87.0 80.0 22.C	45.0	56.0 63.0 63.0 63.0	65.0 110.0 24.0 77.0 84.0 22.0 85.0 100.0 24.0
Z Z Z	87.0	3.5	71.0 71.0 28.0 61.0 53.0	65.0 77.0 85.0
	9.1	9.	0 0 0 0 0 0 0	3.0
LABID	A0 64-03	80 AD	6 4 - 05 6 4 - 05 6 4 - 03 6 4 - 03	68-09 68-02 68-10
יירטכ	1-4C	170N	11111	10 A D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1 - CL	2240	1540 2060 2336 205 1625	RL INE 1520 2148 2336
ENDING DATE-TIME	H-VILLE SPRING BRANCH 2.4 - CUDD RDAD 5 18JANSO 2100 18JANSO 2143 1-4C 6M-03	H-VILLE SPRING BRANCH 5.6 - PATTON 5 18JANBO 2215 18JANBO 2240 1-4C	INDIAN CREEK - TRIANA 5 18JANBO 1500 18 JANBO 1540 1-4C 5 18JANBO 2010 18JANBO 2060 1-4C 5 19JANBO 2301 18JANBO 233c 1-4C 5 19JANBO 140 19JANBO 205 1-4C 5 19JANBO 160 19JANBO 1625 1-4C	INDIAN CREEK 4.6 - CENTERLINE ROAD 5 18JANSO 1428 18JANSO 1520 1-4C 5 18JANSO 2045 18JANSO 2148 1-4C 5 18JANSO 2245 18JANSO 2335 1-4C
ING	NG 9R 2100	ING BR 2215	1500 2010 2010 2301 140 1600	14.6 14.8 2045 2245
3661M Da 16-1	E SPK] JANBO	E SPR]	CREE JANGO JANGO JANGO JANGO	CREEJANSO JANSO JANSO JANSO
RAIN BEGINNING EVENT DATE-11ME	н-VI LL 5 18.	H-VILL 5 18.		1001 AN 3 18 9 16 9 16

A. THE ABOVE DATA WERE ANALYZED TO COMPARE WITH TOTAL VALUES CALCULATED BY ADDITION OF THE DISSOLVED AND SUSPENDED DOTR VALUES.

B. THE ABOVE DATA WERE ANALYZED TO COMPARE WITH TOTAL LESS THAN VALUES TO ZERO.

C. MAINUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

C. MAINUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE.

D. SUSPENDED SOLIDS, 663U - NONFILTERABLE RESIDUE WHICH PASSED THROUGH A GLASS FIBER FILTER PAD.

F. O.45U, 63U - NONFILTERABLE RESIDUE WHICH PASSED THROUGH A GLASS FIBER FILTER PAD.

F. O.45U, 63U - NONFILTERABLE RESIDUE WHICH PASSED THROUGH A GLASS FIBER FILTER PAD.

G. HLOC - HORIZOWIAL LOCATION:

1-4C - REFERS TO A COMPOSITE AMPLE OF HORIZOWIAL LOCATIONS LEFT, MIDDLE AND RIGHT:

0.6D - REFERS TO A COMPOSITE SAMPLE OF HORIZOWIAL LOCATIONS LEFT, MIDDLE AND RIGHT ATO.6 OF THE DEPTH.

ENGINEERING AND ENVIRONMENTAL STUDY
OF DDT CONTAMINATION OF HUNTSVILLE
SPRING BRANCH, INDIAN CREEK, AND
ADJACENT LANDS AND WATERS,
WHEELER RESERVOIR, ALABAMA

# TASK 7

ASSESSMENT OF DDT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUSTERSVILLE RESERVOIRS (SPATIAL EXTENT OF CONTAMINATION)

Tennessee Valley Authority Office of Natural Resources

August 1980

### PREFACE

This document was prepared in support of the Engineering and Environmental Study of DDT contamination of Huntsville Spring Branch, Indian Creek, and Adjacent Lands and Waters, Wheeler Reservoir, Alabama, for the U.S. Corps of Engineers.

This document contains information produced in fulfillment of an interagency agreement between the U.S. Corps of Engineers and the Tennessee Valley Authority (TVA Contract No. TV-52305A).

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Raw D	ata Tabulations .										Appendix B

TASK 7
WORKTASK DESCRIPTION

### TASK 7

ASSESSMENT OF DDT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUNTERSVILLE RESERVOIRS (SPATIAL EXTENT OF CONTAMINATION)

# 1.0 Purpose

The purpose of this task is to define DDTR\* concentrations in select mammalian, avian, and reptilian species common to mainstream reservoirs of the Tennessee River. In addition, this tack documents DDTR levels in these vertebrate specimens at various geographical distances from a major contamination focal point (Huntsville Spring Branch).

## 2.0 Scope

This task encompasses shorelines and floodplains of Wheeler,
Guntersville, and Wilson Reservoirs, including adjunct streams
and wetlands.

# 3.0 Sample Collection and Handling

### 3.1 Types of Samples

- 3.1.1 Green herons were the primary avian targets. A minimum of five to an optimum of ten specimens were collected at each location with seven specimens being the preferred sample size. Samples consisted of all age/sex classes of summer (August through September, 1979) populations.
- 3.1.2 The short-tailed shrew and the muskrat were the primary mammalian targets. A minimum of five to an optimum of ten specimens were collected at each location with seven specimens being the preferred sample size.

<sup>\*</sup>DDTR = DDT isomers and metabolites

Short-tailed shrew - Samples consisted of all age/sex classes of summer (August through September, 1979) populations. Shrew populations were scarce within floodplain sample locations; therefore, desired sample sizes were not obtained at all sites.

Muskrat - Samples consisted of all age/sex classes of summer (August through September, 1979) populations.

3.1.3 The snapping turtle and water snakes (<u>Natrix</u> sp.) were primary target specimens. A minimum of five to an optimum of ten specimens were collected at each location with seven specimens being the preferred sample size.

Snapping turtle - Samples consisted of all age/sex classes collected between August and September 1979.

<u>Water snake (Nacrix sp.)</u> - Samples consisted of all age/sex classes of summer (August through September, 1979) populations. Because water snakes were not abundant, desired sample sizes were not obtained at all sites.

## 3.2 Sample Locations (see Appendix A)

Specimens were collected within a 1.5 mile radius as indicated in Appendix A or as proximal as possible. Emphasis was placed on specimens located at or near the reservoir-shoreline interphases within each sample location. Specimens located landward from water-land interphases were not considered desirable, with the exception of shrew populations.

3.2.1 Vertebrate Species (Six sample locations TRM 271-402)

Site I - Approximate TRM 271

Site II - Approximate TRM 299

Site IV - Approximate TRM 311

Site VII - Approximate TRM 324, upstream 4 miles from confluence of Indian Creek and the Tennessee River (Huntsville Spring Branch).

Site VIII-Approximate TRM 330 Site IX -Approximate TRM 402

# 3.3 Field Collection

3.3.1 Five to ten specimens each of the six species were collected (trapped/shot) at designated sites. Heron samples were not obtained beyond September 15 to decrease the probability of sampling migrants. Mammal and reptile specimens were procured before October 1, 1979.

# 3.4 Sample Handling

- 3.4.1 Each specimen collected was wrapped in paper and placed on ice in the field and then transferred to a chest freezer in the laboratory.

  Total length (mm) and weight (g) was recorded and individual specimens labeled and placed in the laboratory freezer. Caution was exercised to prevent contact with any plastic materials.
- 3.4.2 Each sample consisted of a portion of flesh (approximately 50 g) collected from breast musculature. Derivations in sample weights were necessary due to lack of breast musculature and/or size of individuals. To approach 50 g sample weights for muskrats, breast musculature and muscle tissue from all four legs were utilized. To obtain 70 g samples from snapping turtles, muscle tissues from the breast and ventral portions of the two front legs were removed. The following body parts were not used with shrew samples: head, tail, skin, feet, and internal viscera.

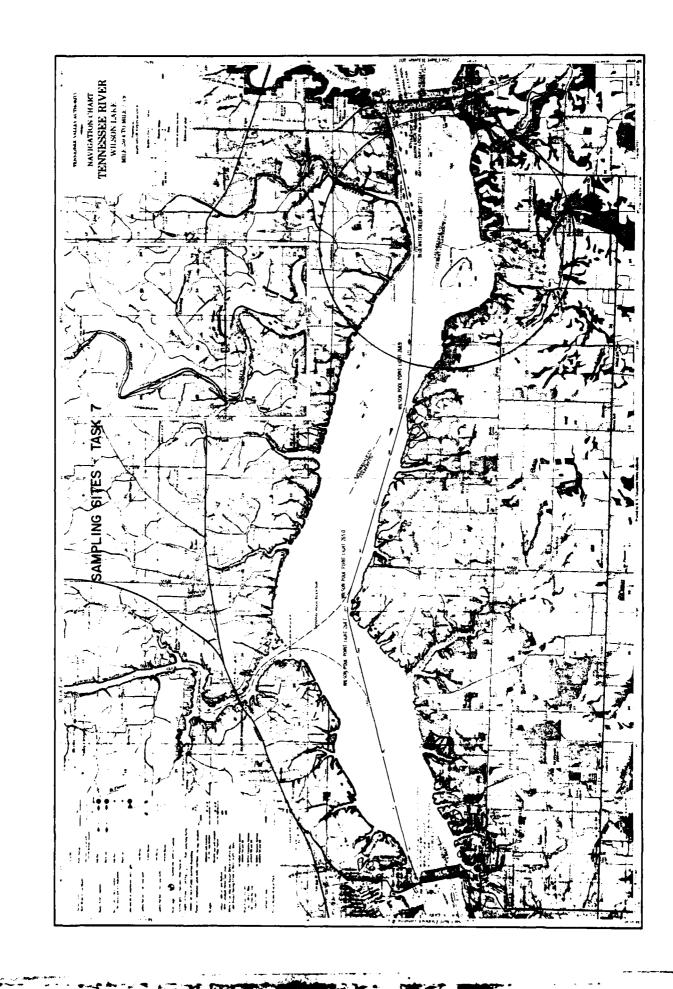
  Muscle samples from snakes were limited to tissues between the

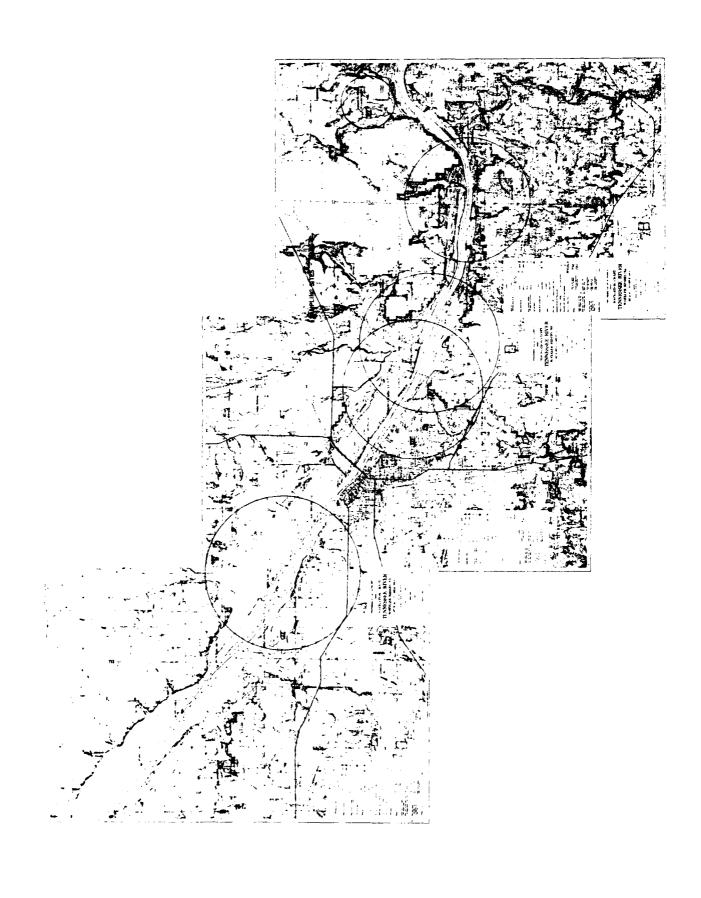
head and posterior anal opening. Internal viscers were not used for DDT, DDE, or DDT residue estimates of any vertebrate specimen. Each of the individual species samples from one collection site were weighed and wrapped separately in aluminum foil and properly labeled. A separate polyethylene ziplock bag was used for all species samples from a given collection site (5-10 samples, 1 bag). The remaining body from each specimen that had portions of flesh removed was weighed, labeled, wrapped in aluminum foil, and retained in a freezer to provide capabilities for determining total DDT residue (head, flesh, viscera).

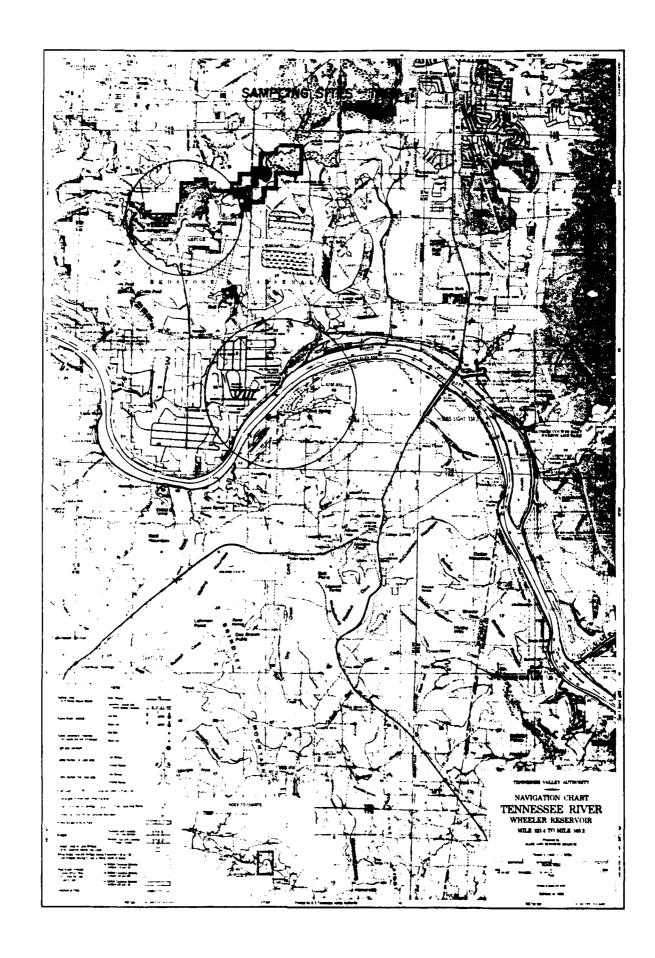
## 4.0 Sample Analysis

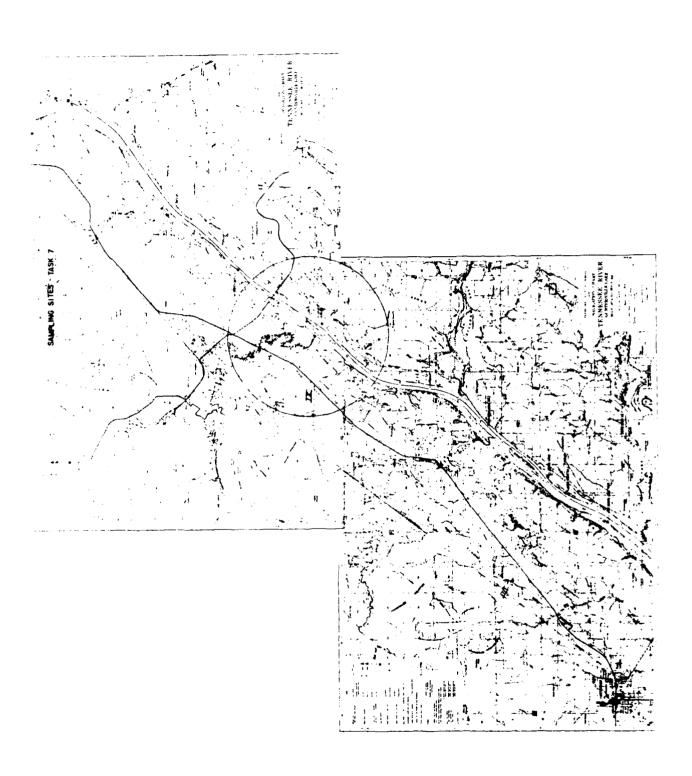
- 4.1 A 10-gram aliquot was removed from each approximate 50 g sample of each individual animal from each of the designated stations. The remaining muscle portion of individual animals was retained for future analysis except for shrews where most of the entire animal was utilized. Each individual sample was analyzed for DDT residues consisting of two isomers of each metabolite (DDT, DDE, DDD) for a total of six forms of DDT (see Appendix B for a listing of the data).
- 4.2 As necessary, the whole body, minus feathers and other select parts (feet, etc.), and less the portions from section 3.4.2, were blended and analyzed for DDTR. The retained 40 g fillet from section 3.5.1 was also analyzed for DDTR.
- 4.3 The DDT analysis was performed by the procedure specified in the Quality Assurance document. Approximately 10 percent of all analyses were replicated. Additionally, approximately 10 percent of all samples analyzed were split and analyzed by a second laboratory.

APPENDIX A
SAMPLE LOCATION MAPS









4 .

APPENDIX B
RAW DATA TABULATIONS

ENGINEERING AND ENVIRONMENTAL S''''' OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

. 6.

TASK 7 - DOT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUMTERSVILLE RESERVOIRS

				•			•																																							
MAXIMUM 1UG/6)	0.572	0.110	0.475			0.227	0.220	0.132	0.530	0.370	7.040	0.179	0.162	7	001-0	0-110	0-100	16.670	1.208	0-370	0.387	0-100	200	20100	0-100	14-910	0-180	0.100	0.116	7-840		0.128	0.100	0.115	0-100	0-118	3-030	0.240	0.116	0.093	0.323	807.0	0.001	0.374	0-176	4
HINIMUM IUG/6)	0.532	0.020	0.445		9.44.6	2770	0.00	240.0	0.430	0.240	6-870	640-0	0.072	477°0		000	0000	16.970	1.048	0.2.0	0.387	000-0	000		000	14.720	0-100	0000	0.036	040		840	00000	0.025	0000	0.028	2.530	0.239	0-114	760-0	0.322	0.50	0.000	0.373	61.0	400 30
	0.270	0.020	0.320	2110		0.065	0.00	0.042	0.110	<b>60*050</b>	5.480	0.049	0.072	350	<b>60.010</b>	<0.010	<0.010	16.4	000	0.240	960°0	<0.010	2000		000	12.6	<0.00	010*0>	0.021	000	000	<0-0>	<0.010	0.025	<b>&lt;0.</b> 010	0.028	1.160	002.0	0.063	0.054	042.0	00	440.0	0.2.0	0.130	7.
IN VERTEBRATES DOE-0,P ODE-P,P (UG/G) (UG/G)	0.022	<0.00	<0.010			<0.020	<0.000	<0.00	<0.00	<0.020	0.260	<0.020	010.00	01000	010-02 010-02	<0.00	<0.010	<b>004.0</b>	0.051	<0.020	0.026	<0°0>	010-0>		010-02	0.280	010-0>	<0.000	0.015	006.00		010-02	<0.00	01000>	<0.010	<0.00	<0-100 -100	0.010	0000	0.005	010-0	00.00	0.002	0.021	600	0110
MEASURED 000-P.P	020.0>	<0.020	0.019	0000	40-020	<0.020	<0.050	<b>070°0</b> 0	<0.00	0.240	0.450	<0.020	070°0 00°0 00°0 00°0	0.00	020.0	8	<0.020	006.0>	00000	020.00	0.078	<0°050	020-05		020°0>	0	020.00	<0.020	<0.020	0000	0.00	<0.020	<0.050	020.0>	<0.020	<0°050	001-0>	800.0	0.00	500	*B*0	0 003	0.004	•	210.0	0.130
0F 001 M 000-0+P 1 46/6)	<b>020*0&gt;</b>	<0.020	<0°0>	05000	0.0.0	0-062	<0.030	<0.00	<0.030	<0.030	<0.00	<0.030	<0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00	07000	<0.020					•		-	-		40.020 40.020						001.00				<0.020	<0°0>	<0.100	1000	<0°0>	40°00	100.00	100.0	00°0>	0000	0000	0 60 0
RATIONS DDT-P.P (UG/G)	0.120	<0.050	0.048	0.150	0.00	<0.030	<0.030	<0.020	<0.030	<0.030	0.680	<0.030	<0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0	02000	<0.020	<0.020	<0.020	0.570	0.097	<0.030	0.068	<0.050	<0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0<0 <0>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		<b>60.020</b>	1-160									<0.020					0.011			ċ	<b>.</b>		1.210
CONCENTRATIONS DDT-0,P DDT-P,P (UG/G) (UG/G)	0.120	<0.020	0.058	0.50	0.00	<0.030	<0.030	<0.00	0.320	<0.030	001-0>	<0.030	020.00	02000	<0°0°0°	<0.030	020.00	<0.600	Q	<0.030	0.074	<0.020	<b>&lt;0.</b> 020		<b>40.020</b>	<0.100	0.100	<0.020	<0.020	1.040	00000	<0.020	<0.020	<0.00	<0°0>	<0.020										
SAMPLE WEIGHT (G)	27.2	26.5	2 B. 7	7	21.1	17.3	49.2	37.0	18.2	11.1	5.6	33.4	26.9	9 6	7 1.4	40.0	51.0	1.4	3.6	8°.6	30.0	40.4	9.0		82.6	2.2	79.4	52.0	57.5	0 .	7.5.4	79.6	79.0	76.4	79.4	80.0	3.0	300	36.5	37.0	26.0	28.0	\$ .	24.3	9.97	j
LIPIOS	0.27	0.17	0.32	2	0-16	0.10	0.11	0.14	800	0.19	1.04	0.48	2.5	1000	0.16	0.11	0.21	2.96	1.11	0.17	900	80.0	0.03		0.02	2.14	0.32	0.29	0.52			0.15	90.0	<0.0>	<0.0>	4.0	2.46	•	•	•	•	•	•	•	• ;	1.51
WEIGHT (G)	220 00	240.0	210.0	0.017	95.0	0.09	395.0	130.0	70.0	35.0	10.0	260.0	240.0	0007	1510-0	620.0	830.0	3.9	4.6	50.0	130.0	2041.0	0 4861	2034	0-9784	7.2	0-01+1	1380.0	82000	40	0.01	4082.0	10659.0	3175.0	8845.0	8958	6.8	220.0	997	260.0	230.0	250.0	220.0	0.00	0.017	0.01
LENGTH (MM)	456.0	453.0	0.064	0.00	630-0	575.0	850.0	105.0	635.0	410.0	0.46	465.0	0 1 9 1	000	610-0	575.0	497.0	72.0	90.0	565 0	0.074	530.0	0.074		612-0	91.0	0.866	570.0	538.0	0.27	243	668.0	820.0	240.0	782.0	0.057	95.0	24.0	30.0	51.0	0.00	92.0	\$ 1 °0	0 (	٠,	0.96
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ORGANISM				SMAKE	SMAKE	SMAKE	SNAKE	SNAKE	SNAKE	SMAKE	SHREW		SK HERON		MUSKRAT	MUSKRAT	MUSKRAT	SHR EW	SHREN	SMAKE	SNAKE			Ch. Tibil		SHREW	MUSKRAT	MUSKRAT	MUSKRAT	SHAPE	SHATE THE TA	. ~				SN. TORT			_				ż,		<b>,</b> 9	# FE
L 48 10	-011	_			*						7-157		71072	1011			-108	-1 55				919			90	-158	51-		-110	* 3	7-173	1-048	7-051	7-052	7-053	30-1	1-163			-003	5 6	ŝ	8 6	0	? '	7
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DOTR—— HAXI HUH (UG/G)	9.050	16.060	0.57	0-117	3.980	0000		711.0	0.620	070.0	0-1-0	00100	0.100	0-360	0.270	0.510	0.107	<b>6.</b> 1 90•	0.100	0-100	1, 169	001-0	1610	0.330	25.0	200	1.224	0-4-0	0.761	0-100	0.575	0.635	0.590	0.144	6.135			0-796	0-100	0-100	1.310	0.177		00100	0.360	0-120	0.100
HINIMUM (UG/G)	0000	15.980	0.017	0.047	9-840	0.130	3-830	7700			0	000	0.000	0.270	0.180	0-120	0.017	800	0000	0000	1-129	000	19:0	0.1.0		0.10	101	0.379	0.70	0.016	0.515	0.575	0.530	*20°0	0.00	70.0	000	0-246	000	0000	0.980	0.097	0-00	000	0-300	0.0	
ORATES DOE -P.P (UG AS)	5.820	12.4	0.056	0-034	2.4	0000	07007	3000	0000	010-0>	0.010	<0.000	010-0>	0.270	0.100	0.120	0-017	0	010-0>	010-0>	0000	01000	150-0	0.130		0-110	096-0	0.330	0.500	0.016	004.0	0.510	0	160-0	420-0	010-07	<0.00	0.150	010-0>	<0.010	086	010-0>	<0.00	<0.00	<0.00	0.00	<0.010
IN VERTE DOE -0, P (UG/G)	0.180	0.310	<0.010	010-0>								<0.010										010-07								<0.00		440.0	0.027	010.00		010-02	<0.010	010-0>	<0.010	<0.010	<0.00	<0.010	<0.000	<0.00	<0.010	0.030	<0.010
SA SURED DDD-P,P (UG/G)	0.180	0.150	020°0>	020*0>																				0.000							0.093	0.021	0.033	070	020	020	<0.020	<0.020	<0.020	<0.020	<0°0>	<0.020	<0°0>0	<0,00	<0.020	<0.020	<0.00
OF 001 OD0-0, (UG/G			<0°0>																					0.00									020*0>				-			-	<0.00	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
CONCENTRATIONS DOT-0,P DOT-P,P (UG/G) (UG/G)	1.990																		070*0>	070-05				0000									020	0.00	<0.020	<0.020	<0.020	0.024	<0.020	<0.020	< 0.08 o	0.097	<0.020	<0.020	0.160	<0.050	<0.00
CONCENT DOT-0,P (UG/G)	0.830	1.230	0.019	0.013	0.200	24.0	×0.020	011-0	0.530	<0.00	0.030	<0.00	<0.020	<0°0>	020.0>	<0.100	020 0>	< 0.030	070-07	070-07	5000		0.0	0.00	<0.020	<0.020	<0.00	<0.020	0.084	<0.020	020*0>	070*0>	020-020	0.025	<0.020	<0.020	<0.00	0.072	<0.020	020.0>	060.0>	<0.020	<0.020	<0.00	0.140	<0.020	<0.020
SAMPLE WEIGHT (G)	3.6	5.5	26.1	* ° K 7		4	7.0	4	2.6	40.4	54.8	4 I • 8	51.4	38.6	41.3	4.6	0.8	8	7.00	51.2	7 7.0		8 6	4	35.2	7 2.8	2 5.2	19.3	19.2	67.0	80.0	4.87	1 0 0	10.3	58.4	52.1	3 2.1	480	32.0	50.5	3,0	74.4	57.0	56.4	76.0	64.2	73.8
ti PIDS	4.59	2.74	0.13	100	0.72	1.59	0.05	0.16	1.10	0.18	0.36	0.50	0.12	0.07	6.0	)	000	50.00	3.	900	) c	2000	0.12	0.13	6000	0.12	0.15	0.61	1.23	9001	90.0	000	16.0	0	0.31	0.14	44.0	0.73	0.28	0.21	1.54	0.14	<0.0>	0.05	90.0	60.05	<0.0>
WE 16HT (6)	10.0	9	9	4.4	9	7.6	7654-0	11.0	7.8	1030.0	1290 0	800.0	690.0	210.0	100-0	***	20,000	11,000	0.00	340	200	75.0	25.0	8	1 20 •0	745.0	245.0	195.0	160.0	1420.0	3675	0.622	1580.0	13.20.0	1640.0	1140.0	555.0	0.006	545.0	765.0	12.0	10149.0	1984.6	1927.0	9411.0	2. 2.0	5443.0
LENGTH (MM)	93.0	0.06	0.670		95.0	87.0	755.0	0.06	82.0	551.0	290.0	0.664	535.0	0.468	00767		040	0000	0000	1074-01	200	0.504	480.0	470.0	0.069	980.0	442.0	450.0	430.0	0.409	2000		7017	550.0	620.0	547.0	462.0	\$50°0	440.0	475.0	95.0	0.00%	520.0	210.0	962.0	20000	613.0
A GF										<	<	<b>,</b>	<b>-</b>					•	٠-	•	•	:					<	< 1	<b>-</b>	<	•	۲ -	٠.	< <	∢	⋖	H	-	<b>,</b>	-							
ORG ANI SM	SHREW	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.44.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A	_							_	MUSKRA		STANT STANT				1		SNAKE	MISKRAT	•	SNAKE	SNAKE	SNAKE	SMAKE	5	8	8	MUSKKA1	20 - 10 C	, ,	NUS K	MUSKRAT			MUSKRAT	MUSKRAT	MUSKRAT	MUSKRAT	•				ż.	ż	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
LABID	7-161	36		7-160	7-162	7-165	7-055	7-1 \$	7-167	7-131	7-132	R .	1	260	247-7	070-6	7	7 1 23	7-1-1	90	7-1 29	7-091	2000	7-097	3-0-L	2-04	2010	7-020	8107	25	9 9		7-122	7-123	7-125	1-127	7-121	7-124	7-126	7-128	7-183	7-041	7-045	2-0-63	10-1		<b>9</b> <b>1</b> <b>1</b>
DATE	1540679	134067	15401.79	1640679	TO AUG 70	17 AUG 79	17AU673	18AUG79	16 AUG 79	20 A UG 70	20AUC 79	ZOA UG 79	50 AUG 19	20406	22 A. K. 70	234116.79	23 ALIS 70	2 74 UG 79	77 AUG 79	274 UG 79	65 EP 79	6SEP79	65EP79	65 EP 79	65E P.79	6SEP79	6AUG79	64 UG 79	74 UC 75	74.15.79	94116.79			13AUG 79	13AUG79	13AUG 79	13AUG70	13AUG 79	134 UC 75	1340679	20 A UG 79	24AUG79	24AUG 79	6400 70	24AU6 79	24 M 16 79	<b>~</b> 70 <b>√</b> √ 7
\$116	~ 1	<b>y</b> 1	٧ ٧	· ~	7	~	~	7	7	7	rų (	<b>1</b>	۰,	۰,	۰, ۲	, ^	• ^	~	۰ ۲	7	~	7	11	7	~	7	4	•	•	• 4	•	• •	•	4	*	•	•	* .	•	•	•			•	•	•	*

ENGINEERING AND ENVIRONMENTA "TUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BRANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

TASK 7 - DOT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUNTERSVILLE RESERVOORS

DOTR MAXI HUN (UE/G)	2.994	2.648	0.197	0.340	6 0 6 6	4.444	0.634	0.129	22.740	0.936	<b>4.610</b> *	2.410	1.159	520-1	000		0.4.0	239	0.956	1.40	0-220	<b>9.</b> 500	£73	6-221	£110	2	180	<b>6.</b> 136	200	0£ 0° <b>9</b>	2.519	11.820	000		100	2 100	L.380	<b>L</b> 18	<b>C</b> 1112	£-180*	<b>1</b> 00	1.100	<b>L</b> 100	L 132	F-127	001
#ININU# (UG/G)	2.954	2.628	0.127	0.275	36	F 0 - F	0.594	0.039	22.720	0.916	4.580	2.390	1.119	1.000	047.90	001-0	0.560	0-169	9060	1.400	0.130	0.430	0.718	0-17	0.0		0.130	980.0	0000	\$ . \$	2.499	11.420	0000	0000	000	00000	00000	0000	0.022	080.0	0000	0000	000	0.032	0.04	000
EBRATES DOE-P.P (UG/G)	2 • 2 30	1-120	0.052	200			0.460	0.039	7.350	0.480	2.020	1.250	0-810	06.50		0		0-130	0.780	0.30	0.130	0.300	0900	0-074	0-015		0.054	0-023	<0°000	55.8	1.710	9	001.7	00.00	<0.010	010-0>	<0.050	010-0>	0.022	<0.000	<0.010	010-0>	<0.010	01000	01000	9
IN VERTEE DOE-0,P D (UG/G)				0.00						440.0	0.320	0.140	0.052	90.	000			<0.00	<0.010	0.120	<0.000	<0.00	1100	<0°0>	010-0>	070-07	010-02	<0.00	<0.030	<b>060.0</b> 0	0.055	<0.100 0.100	064.0	40-010 010-02	<0.010	<0.00	<0.00	<0.010	010-0>	<0.020	01000	<0.010	<0.00	020°0>	0°00	<0.00
EA SURED DDD-P,P ( UG /G)	*	1-100	0.075	0.035	0000	9	0.073	<0.020	10.9	0.280	. 950	0.860	0.20	0.570	3. 230			0-039	0.093	0.40	<0.00	0.130	0.140	0.036	020-02			0.027	020.0>	3.000	0.58	0.390	200		<0.020	<0.020	<0.00	020.0>	020-0>	<0.00	<0.050	<0.00	020.0>	<b>60.0%</b>		<0.00
0F 007 M 000-0+P (UG/G)				40°020																				<b>0000</b>													•		•	<0.020	<0.020	<0.020	0°0°	Ş	•	
				020*0>									<0°0>								<0.00			0.0										0.020							٠	•	0,	0	<0.020 <0.020	<0.020
CONCENTRATIONS DDI-0,P DDI-P,P (UG/G) (UG/G)	0.080	<0.020	<0.050	0200	070	000	<0.020	<0.020	0.250	<0.020	<0.030	<0.020	020 0>	070.07	2007	0000	020-02	<0.020	<0.020	<0.020	<0.020	<b>020.0</b> 0	<0.020	<0.020	<0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0°00 <0		020-02	<0.00	<0.0>	0.540	<0.020	<0.200	00.03	070-07	<0.020	<0.020	<0.00	<0.020	<0.00	0.080	<0.020	<0.020	<0.020	0.032	6.6	<0.020
SAMPLE WEIGHT (6)	**	27.0	2 4-0	8 4	200	2.9	25.7	23.6	20.7	21.0	29.1	2 1.6	21-12	0.67	7.1.5	77.	7.5.7	73.0	79.0	22.4	76.8	63.8	3.5.6	120	27.6	100	40.7	57.6	8.0	300	65.2	9		5.5.7	8 1.0	79.2	3.1	26.6	24.7	51.8	25.2	31.4	23.2	16.5	900	70.0
T LIPIOS	1.40	0.22	1900	000	0.17	0-14	0.18	0.18	1.02	0.12	0.53	0.92	0.56	1.0	0.0	0.0	\$0°0\$	<0.0>	<0.0>	0.22	0.12	0.11	0.10	0.22	0.13	200	0.14	0-17	60.0	1.22	0.17	68.0	0000	0.12	90.0	<0.0>	0.04	0.29	74.0	0.75	8.0	0.14	0.14	0.41	0.28	2
WE1GHT (G)	11.4	265.0	215.0	0.764	040	15.0	100.0	90.0	210.0	•	280.0	210.0	180.0	0.662	245-0	10886-0	5102-0	9411.0	7597.0	250.0	8164.0	745.0	1240.0	930.0	0.000	7007	0-006	830-0	300 0	14.6	0.046	14.4	0.012	1927.0	7654.0	3231.0	4.6	305 0	245.0	1160.0	205-0	550.0	450-0	316.0	665.0	0.08
LENG TH	97.0	458.0	455.0	0000	870.0	350.0	3.00	630.0	0.44	•	438.0	450.0	438.0	0.76	457.0	200	630.0	913.0	750.0	438.0	735.0	1075.0	578-0	530.0	0.034		0.4	\$00 P	380.0	0.96	126000	200		0.084	832.0	603.0	100.0	482-0	448.0	500.0	435.0	450.0	444	398.0	0.884	0.061
<b>A</b> GE		-	-						-	<	<b>-</b>	<b>,</b>	۰.	-	4	ι				~			⋖ .	٠,	<b>-</b>	۹ ۳	•	-	<b>H</b>			•	-					-	<	∢	<b>-</b>	-	-	-	-	
ORGANISM	SHREW	GR. MERON		SN. TOKIL					GR.	8	GR. HERON	, C	S. HEACH	9	ב ב ב ב ב ב	ž	N	SN.	SN.	GR. HERO		SNAKE	MUSKRAT	HUSKRAT	MUSKRAT	MALCH MAT	MUSKRAT	MUSKRAT	MUS KRAT		SNAK	SHREE		Ž	Š	S.N.	SHE	I FR	GR. HERON	MUSK	MUSKRA	MUSKR	MUSKRA	#USKR	HUSK	S K
LABIO	7-181	7-025	200	7-1008	7-102	7-103	7-104	7-105	7-030	7-028	7-024	1-025	979	100	7-021	9,0	7-061	7-056	30-7	7-023	7-057	7-106	91-1	7 '	741-/		7-145	7-147	1-149	1-12	101-2	7-182	000	7-072	7-073	7-074	7-176	7-037	የ	7	7-115	7	7	7	7	
DATE				118K72				2 X 3	JUL 79	¥ C6 78			140679	3									25AUG 79			2 3 3 3 6					2 55 EP 79								27975	5AUG79				5AUG 70	2 1	
3116	•	<b>~</b> (	<b>~</b> •	- ^	. ~	~	-	^	7	•	_	~ 1	~ r	۰,	- ~	. ~	_	1	~	~														•	•	•	•	•	•	•	•	€ .	•	<b>6</b> 0 (	<b>8</b> 0 (	0

ENGINEERING AND ENVIRONMENTAL STUDY OF DOT CONTAMINATION HUNTSVILLE SPRING BKANCH, INDIAN CREEK, AND ADJACENT LANDS AND WATERS WHEELER RESERVDIR, ALABAMA

TASK 7 - DDT LEVELS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUNTERSVILLE RESERVOIRS

DOTR HAXI HUH (UE/G)	0.00	0.209	1.180	1.400	1-000	200	0-100	1,045	0.290	0.372	1-950	0.121	0.310	001.0	001-0					00	00100	0.297	0.280	0.280	1.230	1.100	009-0	1001-0		00100	0.100	0.100	0.100	001-0	3			0-180	0.190	0.210	00100	0.124	0.100	~	0-142	0.100
HININGH (UE/G)	07670	0.0	0.380	0000	0000		0.00	1-005	000	0.182	0.450	0.031	0.260			200				0-00	000	0.037	0.000	0000	1.150	000	0150			000	00000	00000	000		3 8			000	0.100	0.080	00000	0.034	00000	0000	0.052	0000
VERTEBRATES E-0,P DOE-P,P UG/G) (UG/G)	0.200	0.099	08830	007°0	8	0110	0.00	0-470	0000	0.062	0.450	0.031	0.220	010-07	010.0			999	010-02	<0.010	010°0>	<0.100	<0.100	<b>001-0</b>	0.630	40° 100	270		010-02	<0.00	010-0>	010-0>	010.0>	010-07		010-02	<b>6.010</b>	<0.020	0.100	0.080	01 00 0>	0.034	010.0>	<0.00	0.052	<b>60.01</b> 0
IN VERTE DDE-0,P (UG/G)	0.099	<b>&lt;0.00</b>	<b>40.100</b>	<0.500	8 8	070.0	<0.010	0.074	<0.00	0°0°0	<0°-200	010.0>	010000	01000		001-0>	<0.010	010-02	<0.010	<0.010	010-0>	<0. 100	<0.100	<b>001 • 0</b>	0.220	007.07		070-07	<0.00	<0.00	<0.00	<0.010	010-07		010-02	010-07	<0.010	<0.030	<0.010	<0.020	00.00	<0.000	<0.00	<0°00	<0.00	<0.010
OF DOT MEASURED DDD-0, P DDD-P, P (UG/G) (UG/G)	<0.020	<0.00	<0.100	002.00	000	5-120	<0.020	0.370	0.0×	0°0°0	<b>007-00</b>	020 000	8000	0000	000	000	<0.00	020-02	<0.020	020.00	000°0×	<0.020	<0.00	<0.020	040	001.0		<b>60-020</b>	020-02	<0.00	<0.00	<0.00	070.00	020-02		020-020	<0°00	<0.020	<0.020	<0.00	020.0>	<0.00	00°0>	<b>0000</b>		<0.00
	\$	000	<0.50	002-0>	002.00	1-210	<0.020			•		•	0.00				<0.020		•			<0.020										<0°0>	070*07	020-02	40-020	<0-050	<0.020	0000	<0.020	<0.030	<0.020	<0.00	<0°0>	<0.020	<0°0>0	< 0.020
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ENGINEERING AND ENVIRONMENTAL STUDY OF DDT CONTAMINATION HUNTSVILLE SPRING BKANCH, INDIAN CREFK, AND ADJACENI LANDS AND WATERS WHEELER RESERVOIR, ALABAMA

1

TASK 7 - DDT LEVFLS OF SELECTED VERTEBRATES IN AND ADJACENT TO WHEELER, WILSON, AND GUNTERSVILLE RESERVOIRS

HAKIMUM 14676) MINIMUM (UG/G) SAMPLE CONCENTRATIONS OF DOT MEASURED IN VERTEBRATES WEIGHT DOT-0,P DOT-P,P DOD-0,P DOD-P,P DOE-0,P DOE-P,P (G) (UG/G) (UG/G) (UG/G) (UG/G) (UG/G) LIPIDS # 16H (6) LENGTH A GE LABID ORGANISM DA TE

299, ROUND I SLAND 1 LAPPROX. TENN. RIVER MILE 271, HCG ISLAND
2=APPROX. TENN. RIVER MILE 299, ROUND ISLAND
3=APPROX. TENN. RIVER MILE 319, LIMESTONE
5=APPROX. TENN. RIVER MILE 317
6=APPROX. TENN. RIVER MILE 327
7\*APPROX. TENN. RIVER MILE 321, SPRING BRANC
8\*APPROX. TENN. RIVER MILE 320, ROCK SPRING
9=APPROX. TENN. RIVER MILE 320, ROCK SPRING
9=APPROX. TENN. RIVER MILE 320, ROCK SPRING
9=APPROX. TENN. RIVER MILE 320, CROM CREEK FOOTNOTE S:

321, SPRING BRANCH 330, ROCK SPRING 402, CROW CREEK

C. MINIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO ZERO. D. MAXIMUM TOTAL DOTR CALCULATED BY SETTING ALL LESS THAN VALUES TO THEIR ABSOLUTE VALUE. E. SAMPLES LABLED ".UNK79" WERE COLLECTED IN AUGUST OR SEPTEMBER, 1979 BUT EXACT DATE UNKNOWN. F. --ALL SAMPLES ANALYZED BY STEWART LABORATORIES, INC. I=IVTERMEDIATE A=ADULT

-- INDICATES SAMPLE IS A MERGED VALUE (VALUE REPORTED IS THE AVERAGE OF TWO ANALYSES)

These data showed poor interlaboratory agreement and are believed to be biased low (see Quality Assurance Section of this report). NOTE:

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# APPENDIX VI

WORKTASK DESCRIPTIONS AND RESULTS FOR 3 WAR WORKTASKS AND QUALITY ASSURANCE DOCUMENT

# APPENDIX VI: WORKTASK DESCRIPTIONS AND RESULTS FOR 3 WAR WORKTASKS AND QUALITY ASSURANCE DOCUMENT

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# APPENDIX VI: WORKTASK DESCRIPTIONS AND RESULTS FOR 3 WAR WORKTASKS AND QUALITY ASSURANCE DOCUMENT

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# TASK 1 ENVIRONMENTAL ASSESSMENT OF UNNAMED CREEK SYSTEM A PRINCIPAL CANDIDATE FOR RECEIVING DIVERSION FLOW

# 1.0 PURPOSE

To carry out an environmental inventory of Unnamed Creek entering Wheeler Reservoir at approximately TRM 332. This creek is a principal candidate for receiving the diversion flows from Huntsville Spring Branch. This creek system would have to be altered by increasing channel depth and width to handle stormwater runoff.

# 2.0 SCOPE

Unnamed Creek (UNC) was sampled in reaches near UNCM 0.5, UNCM 1.5, and UNCM 2.8 for benthic macroinvertebrates. Stream habitat was described for the entire reach to be disturbed by dredging. Adjacent upland vegetation was listed at the macroinvertebrate sampling stations.

# 3.0 PROCEDURES

# 3.1 TYPES OF SAMPLES

The stream communities sampled were limited to macroinvertebrates. No samples for fish or aquatic vascular plants were taken. The creek has been channelized in the past and presently represents poor stream habitat.

### 3.2 STATION LOCATION

Stations for organisms inhabiting the stream environment were UNCM 0.5, UNCM 1.5, and UNCM 2.8. The entire length of the potentially affected reach was examined to document stream habitat.

## 3.3 FIELD COLLECTION

# 3.3.1 Organism Collection

Benthic macroinvertebrates were collected in a transect across the stream channel at right bank, left bank, and midchannel. Three replicates each were taken by Petite Ponar grab samplers and composited at right bank, left bank, and midchannel. The number of samples at a transect were a three-replicate composite each for the right bank, left bank, and midchannel sections. Separations were done in the field using a U.S. Standard #30 mesh bucket sieve. Formalin was used to preserve the samples prior to final processing in the laboratory. Rose bengal dye was used as an organism stain to facilitate processing.

# 3.3.2 Habitat Description

1) Stream habitat was documented by surveying the stream reach to be altered by dredging, and terrestrial and aquatic vegetation was noted.

Substrate conditions were also noted.

2) Adjacent upland and floodplain habitats were surveyed, and appropriate herbarium specimens collected where necessary.

# 3.3.3 Data Handling and Reporting

All data were summarized into a tabular form. The data is discussed in Appendix II, Section 2.0.

# 4.0 SCHEDULE

The survey was completed in autumn during leaf drop. Field collections in the stream were conducted during non-flooding conditions.

Table VI-1 . Benthic Macroinvertebrates Collected in Unnamed Creek October 22-26, 1979.

Taxonomic Classification	Organisms p 0.5	er square 1.5	meter at mile 2.8
Annelida-Hirudinea			
Hirudinea		38	19
Annelida-Oligochaeta			
Aulophorus furcatus Dero obtusa Nais behningi Nais variabilis	  96 5	19 38 	48 
Tubificidae			
Branchiura sowerbyi Ilyodrilus templetoni Limnodrilis hoffmeisteri Peloscolex multisetosus Tubificidae	172  4521  555	1954 1130 6265	1207 120 4943 57
Miscellaneous Oligochaeta			
Lumbriculidae Mollusca		10	
Gastropoda Corbicula manilensis Physa sp.	383  24	278 19	 
Unidentified gastropoda Bivalvia	24	••	
Sphaerium sp. Arthropoda-Crustacea		666	694
Asellus sp.	**	<b>=</b> =	19

Table VI-1 . Benthic Macroinvertebrates Collected in Unnamed Creek October 22-26, 1979. (Continued, Page 2)

Taxonomic Classification	Organisms 0.5	per square 1.5	e meter at 2.8	mile
Arthropoda-Insecta				
Chironomidae				
Chironomus sp.	<b>6</b> 686	6207	115	
Cladotanytarsus sp.	19			
Cladopelma sp.		19		
Clinotanypus sp.			211	
Cricotopus sp.	77	19		
Cryptochironomus fulvus	57			
Cryptochironomus near blarina	48	19		
Dicrotendipes neomodestus	43	57	86	
Goeldichironomus holoprasinus	 77	19	115	
Micropsectra sp.	77	134 287	115	
Polypedilum near illinoense Procladius sp.	158	19	10	
Pseudochironomus sp.	19	19		
Tanypus carinatus	19		134	
Tanypus neopunctipennis	**		67	
Tanytarsus sp.		••	201	
Thienemanniella sp.	57			
Ephemeroptera				
Caenis sp.			57	
Miscellaneous Insecta				
Ceratopogonidae (no larval key)	5		115	
Chaoborus sp.			19	
Corixidae	-		5	
Epicordulia sp.	~~	14		
Perithemis sp.			5	
Miscellaneous Invertebrates				
Dubiraphia sp.	62	19		
Nematoda		38	326	
TOTAL NUMBER OF ORGANISMS	13,064	17,271	8,573	
NUMBER OF TAXA	19	21	21	
SHANNON-WEAVER SPECIES DIVERSITY (BASE 2)	1.89	2.28	2.36	

# TASK 2 VEGETATIVE MAPPING OF AREAS POTENTIALLY AFFECTED BY DREDGING OR DIVERSION ALTERNATIVES

# 1.0 PURPOSE

To prepare vegetative maps to delineate existing habitats potentially affected by the application of dredging or diversion alternatives.

# 2.0 SCOPE

Selected areas along Huntsville Spring Branch and Indian Creek were surveyed and existing plant communities were delineated. For this portion of the task the area where mapping was conducted has an upper boundary at Martin Road and extends along Huntsville Spring Branch and Indian Creek including their floodplains and the proposed diversion routes to Wheeler Reservoir. It is in this general area that the various dredging and diversion plans are being considered. Existing plant communities were inventoried so as to provide additional environmental input to potential alterations that will occur should implementation take place in this area.

The out-of-basin diversion plans direct flow from Huntsville Spring Branch at approximately HSBM 8 southeast along a corridor to Unnamed Creek, which enters Wheeler Reservoir at TRM 332. Vegetative mapping was also conducted in this area.

# 3.0 PROCEDURE

A detailed land use and vegetation map of the potentially affected areas was prepared. All major land uses and habitats were delineated. The mapping procedure was carried out in successive stages. Initial assessment was conducted through the use of appropriate aerial photography scaled 1 inch to 1000 feet.

Ground truthing was carried out by conducting transects on the habitats potentially affected. Transects were completed by using the "Wisconsin method" Curtis and McIntosh (1951) to estimate standing crop and to determine the dominant species. This method is computed as follows:

- Relative density of species A in = stand X
- Stand density of species A in stand X Total stand density of all species in stand X
- 2. Relative dominance of species A = in stand X

Basal area of species A in stand X
Total basal area of all species in stand X

x 100

The maximum value for an importance index is 300 (100 + 100 + 100). Deviations from this value are due to "rounding" of various calculations.

# 3.1 LOCATION OF AREAS SURVEYED

The survey included floodplain and appropriate corridors potentially designated for dredging and diversion routes. This included part or all of the following:

The corridor from Huntsville Spring Branch southeast to Unnamed Creek included the following areas:

T4S R1W Sections 34, 35.

T5S R1W Sections 1, 2, 3.

T5S R1W Sections 2, 4, 12, 13.

# 3.2 FIELD COLLECTION

During the ground survey appropriate collections were made of plants for herbarium specimens. No plant species classified as rare, threatened or endangered were found.

# 3.3 DATA HANDLING AND REPORTING

All data were summarized in tabular form. A vegetation map for all potentially affected areas was constructed. The data is discussed in Appendix II, Section 2.0.

# 4.0 SCHEDULE

The survey was carried out during autumn, during leaf drop.

Table VI-2 Importance Values of Tree Species Occurring in Huntsville Spring Branch and Indian Creek Floodplain Forests

Common Name	Scientific Name	Importance Value		
Transect 1 * N = 53				
Red Maple Green Ash American Elm Blue Beech Water Tupelo Black Willow	Acer rubrum Fraxinus pennsylvanica Ulmus americana Carpinus caroliniana Nyssa aquatica Salix nigra	135.6 53.7 35.1 31.0 25.6 19.2		
	Transect 4 N = 285			
Green Ash Blue Beech American Elm Cherrybark Oak Sweetgum Water Oak Hackberry Overcup Oak Willow Oak Black Willow Honeylocust Swamp Chestnut Oak Redbud	Fraxinus pennsylvanica Carpinus caroliniana Ulmus americana Quercus falcata var. pi Liquidambar styraciflus Quercus nigra Celtis occidentalis Quercus lyrata Quercus phellos Salix nigra Gleditsia triacanthos Quercus micheauxii Cercis canadensis	41.6 39.6 agodaefolia 27.6		
•	Transect 7 N = 111			
Green Ash Hackberry Willow Oak Red Maple American Elm Blue Beech Black Willow Sweetgum Water Oak Overcup Oak Cherrybark Oak Sycamore Winged Elm American Basswood Hawthorn Pignut Hickory	Fraxinus pennsylvanica Celtis occidentalis Quercus phellos Acer rubrum Ulmus americana Carpinus caroliniana Salix nigra Liquidambar styraciflus Quercus nigra Quercus lyrata Quercus falcata var. pa Platanus occidentalis Ulmus alata Tilia americana Crataegus sp. Carya glabra	12.6 12.6		

<sup>\*</sup>N = Number of individuals counted.

Table VI-3 Importance Values of Tree Species Occurring in a Bottomland Hardwood Swamp Forest Association on the Redstone Arsenal

Common Name	Scientific Name	Importance Value	
	Transect 8 N = 87		
Water Tupelo Red Ash Red Maple American Elm	Nyssa <u>aquatica</u> Fraxinus pennsylvanicus Acer <u>rubrum</u> Ulmus <u>americana</u>	170.6 57.9 48.7 22.9	

Table VI-4 Importance Values of Tree Species Occurring in the Deciduous Hardwood Forest Association on the Redstone Arsenal

Common Name	Scientific Name Impor	tance Value
	Transect 9 N = 176	
Blue Beech Cherrybark Oak Sweetgum Red Maple Willow Oak American Elm Blackgum Water Oak Red Mulberry Red Oak Swamp Chestnut Oak Flowering Dogwood Persimmon	Carpinus caroliniana Quercus falcata var. pagodaefoli Liquidambar styraciflua Acer rubrum Quercus phellos Ulmus americana Nyssa sylvatica Quercus nigra Morus rubra Quercus coccinea Quercus micheauxii Cornus florida Diospyros virginiana	79.7 53.1 46.3 39.7 22.9 17.0 10.5 10.2 8.6 6.6 6.4 5.8 5.6

Table VI-5 Importance Values of Tree Species Occurring in the Mixed Pine and Deciduous Hardwood Forest Association on the Redstone Arse al

Common Name	Scientific Name Import	ance Value
	Transects 2 and 3 N = 72	
Loblolly Pine American Elm Red Maple Sweetgum Hackberry Cherrybark Oak Blue Beech Redbud Honeylocust Red Mulberry Pignut Hickory	Pinus taeda Ulmus americana Acer rubrum Liquidambar styraciflua Celtis occidentalis Quercus falcata var. pagodaefolia Carpinus caroliniana Cercis canadensis Gleditsia triacanthos Morus rubra Carya glabra	85.5 54.3 38.9 27.3 21.1 16.9 16.2 13.9 9.5 8.2 8.1

#### Aquatic Vegetation

Lemna minor

Duckweed

Myriophyllum brasiliense

Parrotfeather

Myriophyllum spicatum

Eurasian Watermilfoil

Polygonum hydropiper oides

 ${\tt Smartweed}$ 

Ludwigia arcuata

Ludwigia

Zizaniopsis miliaceae

Giant Cutgrass

# Swale Spoil Bank Vegetation

Setaria geniculata

Foxtail Grass

Poa sp.

Grass

Eragrostis sp.

Lovegrass

Fleabane Daisy

Erigeron sp.

Goldenrod

<u>Solidago</u> sp.

do ruem ou

Eupatorium sp.

Thoroughwort

Phytolacca americana

Pokeberry

Rhus toxicodendron

Poison Ivy

Rubus sp.

**Blackberry** 

Smilax bona-nox

Greenbrier

Gelsemium sempervirens

Yellow Jessamine

# Surrounding Forest Trees

Liquidambar styraciflua

Sweetgum

Quercus phellos

Willow Oak

Quercus micheauxii

Basket Oak

Quercus lyrata

Overcup Oak

Quercus Tyraca

Green Ash

Fraxinus pennsylvanicus

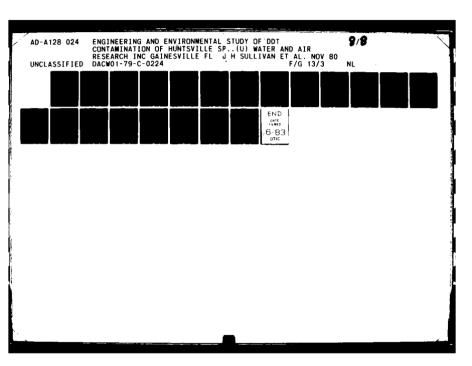
Osage-Orange

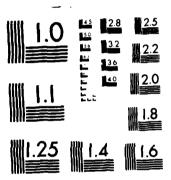
Maclura pomifera

vuugu oraaaga

Celtis occidentalis

Hackberry





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A

Table VI- 7 Importance Values of the Tree Species Occurring in the Unnamed Creek Deciduous Forest Association on the Redstone Arsenal

Common Name	Scientific Name	Importance Value
<del></del>	Transect 10 N = 132	
Willow Oak	Quercus phellos	74.5
Green Ash	Fraxinus pennsylvanica	50.3
Hackberry	Celtis occidentalis	47.6
Overcup Oak	Quercus lyrata	44.1
Shagbark Hickory	Carya ovata	32.4
American Elm	Ulmus americana	26.6
Sweetgum	Liquidambar styraciflua	14.9
Persimmon	Diospyros virginiana	5.6

# Aquatic Vegetation

# None

# Ditch Spoil Bank Vegetation

<u>Uniola latifolia</u>	Grass
Poa sp.	Grass
Erigeron sp.	Lovegrass
Solidago sp.	Goldenrod
Lespedeza sp.	Lespedeza
Cercis canadensis	Redbud
Smilax bona-nox	Greenbrier
Rhus toxicodendron	Poison Ivy
Rhus glabra	Smooth Sumac
<u>Viola</u> sp.	Violet
Rubus sp.	Blackberry
Lonicera japonica	<b>Honeysuckle</b>
<u>Ipomea</u> sp.	Morning Glory
Campsis radicans	Trumpet-vine
Berchemia scandens	Rattan-vine
Vitis rotundifolia	Muscadine
Ulmus americana	American Elm
Acer rubrum	Red Maple
Fraxinus pennsylvanicus	Green Ash
Prunus nigra	Black Cherry
Juniperus virginiana	Red Cedar
Quercus phellos	Willow Oak
Quercus lyrata	Overcup Oak
Salix nigra	Black Willow

# TASK 3 WORKPLAN FOR DETERMINING DDT LEVELS IN THREE FISH SPECIES IN WHEELER RESERVOIR

#### 1.0 PURPOSE

To define the level of DDTR\* in three species in Wheeler Reservoir.

#### 2.0 SCOPE

Fish samples were collected from Wheeler Reservoir including three tributaries.

# 3.0 PROCEDURES

3.1 SAMPLE LOCATIONS

See Appendix V, Task 1.

3.2 TYPES OF SAMPLES

Fish species to be sampled - 6 specimens of each species.

<u>Commercial fish</u> - channel catfish and smallmouth buffalo

Game fish - largemouth bass

#### 3.3 FIELD COLLECTION

Six specimens of the following species: channel catfish, smallmouth buffalo, and largemouth bass were collected from the stations designated in Table VI-9. Gill nets and electrofishing gear were used to make the collections.

#### 3.4 SAMPLE HANDLING

- 3.4.1 Each specimen collected was tagged, wrapped in aluminum foil, and placed on ice in the field. Samples were kept iced (1-3 days) until processed by the laboratory.
- 3.4.2 In the laboratory the fish were weighed and total length was determined. The fish were skinned and both fillets were removed and weighed. The fillets were cut into approximately 1/4 inch cubes, spread on foil, and frozen. The individually frozen cubes were stored frozen in glass containers with foil-lined lids. The remaining fish carcass was wrapped in foil and frozen.

<sup>\*</sup>DDTR = DDT isomers and metabolites

- 3.4.3 Equal quantities of the diced fillets (usually 10 grams) from 6 fish at a sample location were blended in a Waring blender with dry ice to obtain the composite samples. The blended samples were stored in 1 oz. glass containers with teflon-lined caps.
- 3.4.4 Prior to analyses, samples were blinded by replacing existing labels with randomly distributed laboratory numbers. The identity of the individual samples was unknown to all Water and Air Research personnel until after analyses had been completed and results submitted.
- 3.4.5 Blind split samples were included in all groups of analyses.
- 3.5 ANALYTICAL METHODOLOGY

# 3.5.1 Applicable Documents

Pesticide Analytical Manual, Volume 1, Methods Which Detect Multiple Residues, Section 211.13f, U.S. Department of Health, Education, and Welfare, Food and Drug Administration, September 1972.

"Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissues," (1978), U.S. Environmental Protection Agency, EMSL, Cincinnati, OH 45263.

#### 3.5.2 Summary of Method

Approximately 8 grams of ground fish tissue is mixed with anhydrous  $Na_2SO_4$  in a 1:4 ratio. This mixture is allowed to stand for 30 minutes before extraction. The sample is extracted serially 3 times with 100 ml portions of petroleum ether in a high-speed blender.

The combined organic phase is then filtered through additional anhydrous Na<sub>2</sub>SO<sub>4</sub> with a Millipore filter funnel apparatus and collected in a Kuderna-Danish concentrator. The extract is concentrated to approximately 5 ml, transferred to a Florisil column, eluted with 6 percent ethyl ether in petroleum ether and concentrated again to approximately 5 ml. The final extract is adjusted to volume with iso-octane (usually 10 ml).

The extract is subsequently analyzed for  $\overline{D}\overline{D}$  isomers and metabolites using a Perkin-Elmer Sigma 1 gas chromatograph and data system. A 1.84 m x 2.0 mm glass column packed with 1.5%  $\overline{D}\overline{V}$ -17 + 1.95%  $\overline{D}\overline{V}$ -210 on 100/120 Chromosorb W-HP is utilized.

Table VI-9. Summary of Fish Sample Collections

Location Stream	Mile	Channel Catfish	Largemouth Bass	Smallmouth Buffalo
TRM	275	X		<u> </u>
TRM	280	â		X
TRM	285	â	X	^
TRM	290	â	^	X
TRM	295	Ŷ		•
TRM	300	X X		X
TRM	305	x		••
TRM	310			Х
TRM	315	X X X		
TRM	320	X		X
TRM	325			
TRM	330	X X X		χ*
TRM	340	X		χ*
TRM	345		X	
Spring Creek	1	X		
Limestone Creek	3 5	X		
Flint Creek	5	X		

<sup>\*</sup>For SMB 2 fish from TRM 330 were combined with 4 fish from TRM 340 to make a single composite. These fish were also analyzed individually.

Table VI-10. Results of DDT Analyses on Composite and Individual Fish Samples Collected Summer 1980

STORY STATES OF STATES

Max.	16. 23.	50.55	28. 7.7 2.0	19. 5.	14. 2.6	3.5	9.1 7.8	5.3 1.8	8.4 15.	25. 5.6	4.8 6.2	9.3 6.1	13.	99	5.5 11.	8.5
Avg.	10. 23.	50. 50.	28.	19. 7.	14. 2.6	3.1	7.8	5.1 5.8	8.4 15.	25. 5.6	4.8 2.9	9.3 6.1	13.	90.0	5.5 11.	8.5
Min.	10. 16. 23.	50. 150. 50	28. 7.7 2.0	19. 16.	14.	3.1	9.1 7.8	4.1 5.8	8.4 15.	25. 5.6	8.5 2.5	6.0 6.0	13.	9.0.	5.5 11.	8 2.4 3.5
H 9.0	4.4.7.8	14. 16.	2.8 0.85 0.82	× 4 . 8 . 6 . 4	4.4	1.2	9.0 0.0	1.5	5.7	7.1	3.03	2.6	3.7	1.6	4.4 7.4	2.5
0, P	1.1	. 7. 4. 4 . 7. 8. 8	1.6 0.64 0.28	1.1	1.3	0.23	0.80	0.37	$0.85 \\ 1.5$	1.7	0.54	0.90	1.1	0.60	0.63	0.83
1	4.9 7.2 12.	31. 29.	14. 2.7 0.36	ວຸດ ທຸກຸນ	0.90	0.0	3.8	0.14		13. 2.2	2.2 3.1	2.0	6.1	. 6.2	8.7 4.8	2.7
000	0.23	10.3 10.9 10.9	1.8 0.82 0.03	0.35	0.42	0.07	0.1¢ 0.14	0.11	0.19	2.6 0.06	•	0.38 0.03	•	0.56	0.42	0.58
	0.29	0.00	0.52	1.7	1.9	0.42	0.41 1.2	0.45	0.29	$0.59 \\ 0.17$	<0.03 0.32	1.6 0.50	0.41	0.62	<0.03 0.52	0.90
100 d'0	0.25	0.37	0.44 0.16 0.26	0.47	1.3	0.17	0.36	0.27	0.61	0.50	0.07	1.8 0.34	0.40	0.30	9.38 0.38	0.95
FWT	168 199 175	325 411	168 370 352	202 165 325	260	388 391	330 307	308	313 241	413 308	320 565	271	500	515	218 425	402
¥.	732 795 547 465	1252 1255	741 1151 1186	754 679 985	e 1133	1139 $1186$	984 965	1084 e	986 1023	1266 1086	1044 1770	e 1048	1641	1728	91/ 1398	e 1763
1	42.5	50.5 52.0	48 6 6 0 5 0 0 5	43.5 40.5 7	mposit	46.0 48.0	45.0 43.0	45.0 mposit	48.0 45.0	49.0 50.0	46.0 52.0	mposit 48.0	51.0 48.5	51.0	44.0 51.0	mposit 49.0
DAY	6 25 6 25 6 25 7 25		6 27 6 27 6 27		, Ö,	92 9 9	56 26 26 26	5 Ca	92 9 9 9		5 26 5 26	20 20 20	9 9 9 9	388		Com 6 26
8	8888				_											SMB
10#	302 303	306	121 122 123	124 125	115	116 117	118 119	120	308 308	309 310	311 312	325	326	328	330	319
707				w w w		SCM 1	SCM SCM 1		TRM 275 TRM 275							

Results of DDT Analyses on Composite and Individual Fish Samples Collected Summer 1980 (Continued, Page 2) Table VI- 10

Max.	4 6.00 0.00	. o. 4	19.	7.5 6.0	10.	12. 2.8	15.	0.49	0.21	0.37	0.19	0.29	0.81	0.47	8.7	22.	13.	3.5	9.3	21.	15.	3.4	13.	2.6	12.	21.	8.1	12.	12.	0.0
DOTR Avg.	4.2 2.3 2.3 3.0 3.0	 4	19.	6.0	10.	12. 2.8	15.	0.48	0.18	0.34	0.11	0.22	0.80	0.38	8.7	22.	13.	3.5	ۍ ۳.	21.	15.	3.4	13.	5.6	12.	21.	8.0	12.	12.	D. 0
Min.	4.6.9.6 9.0.6.4	0.4	19.	7.5	10.	12. 2.8	15.	0.47	0.15	0.31	0.03	0.16	0.79	0.29	8.7	22.	12.	3,5	۳. 6	21.	15.	3.4	13.	5.6	12.	21.	7.8	12.	12.	٥.٥
P, P	1.1.7	2.5.0	5.1	2.4 1.9	3.2	% %	4.1	0.16	0.08	0.13	0.03	<0.01	0.28	0.13	5.0	7.0	4.1	1.0	5.6	6.9	4.2	1.2	5.1	2.2	5.1	8.5	2.7	4.3	5.5	1./
0,0	0.50	0.78	1.6	0.60	0.99	1.3	1.6	0.04	0.01	0.11	<0.02	0.16	0.09	0.07	2.5	1.9	1.4	0.45	0.92	2.1	5.0	0.48	1.2	0.64	1.3	1.8	96.0	1.6	0.0	0./6
10.0	1.4 0.62 0.66	2.5	8.8	2.3	4.8	4.8 (0.03	3.9	0.23	0.06	0.07	<0.03	<0.03	0.35	0.0	2.8	9.1	5.1	1.4	3.6	ຜຸ	4.2	1.4	3.9	2.2	3.5	2.8	3.7	5.5	5.5	5.5
000   d 6	0.45	0.64	2.7	0.64	0.86	 03.3	7.7	0.05	<0.02	<0.02	<0.03	<0.03	<0.02	<0.03	0.72	1.7	<0.23	0.45	 	0.98	1.2	0.25	0.99	0.47	0.38	96.0	0.76	0.83	0.44	0.44
10 P.P.	0.31	0.52	0.24	0.44	<0.03	0.49	2.2	<0.02	<0.02	<0.05	<0.04 0.04	<0.03	0.04	<0.10 40.10	0.27	0.94	0.49	0.05	0.52	1.5	1.4	<0.03	0.82	<0.04	1:1	2.4	<0.28	1.6	0.40	0.24
100	0.17	0°.0°.	0.46	0.43	0.28	0.65	2.2	0.02	<0.02	<0.05	<0.04	<0.03	0.03	\$0. \$3.	0.37	0.93	1.3	0.18	0.58	۲. ا	2.2	o. 8	0.58	0.07	0.74	1.2	0.23	1.1	0.51	0.32
EMT.	375 482 313	469	323	313 241	396	400 210	ì	239	164	728	150	108	221		319	246	203	294	277	267		333	333	317	412	330	293		231	385
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늬	46.0 46.0 46.0	48.0	44.0	42.0 42.5	45.5	48.0			26.0					윤	4	4	42.0	4	4	4	_			43.0				nposit	36.0	4/.5
DAY	38 S8 38 S8	20 C	26	92 92	56	2,6	Š	27	27	33	33	27	52	Š	92	56	92	56	92	56	Š	56	56	56	<b>5</b> 6	92	<del>5</del> 6	ට්	25	?
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8	S S S S S S S S S S S S S S S S S S S	SAB	3	ខន	ප	ဗင	ဗ	- W	₩.		3	3	3	29	႘	೮	ខ	ප	ខ	ප	ပ္ပ	SAB	SMB	SMB	Seg	SB	SMB	SS	ဗ	3
10#	320 321 322	324	103	104 105	106	201		203	508	209	510	511	512		82	86	87	88	88	8		5	35	93	8	92	96		43	8
T00	TRM 280 TRM 280 TRM 280																													

Results of DDT Analyses on Composite and Individual Fish Samples Collected Summer 1980 (Continued, Page 3) Table VI-10.

Max.		4.7	5.2	27.	15.	18.	7.6	3.1	13.	7.3	15.	9.1	1.4	4.8	5.1	5.1	4	10.	6.3	13.	22.	10.	11.	17.	9.7	10.	12.	4.7	6.1	3.8	17.	12.	9.4	1.4
Avg.	1	4.7	5.2	27.	15.	18	7.5	3.0	13.	7.3	15.	9.1	1.3	4.8	5.1	5.1	4.0	10.	6.3	12.	22.	10.	11.	17.	9.7	10.	12.	4.7	0.9	3.8	17.	12.	9.5	1.4
Min.		4.7	5.2	27.	15.	18.	7.4	3.0	13.	7.3	15.	9.1	1.3	4.8	5.1	5.1	4.0	10.	6.3	12.	22.	10.	11.	17.	9.7	10.	12.	4.6	2.8	3.8	17.	12.	9.1	1.4
E p,p		1:0	1.6	0.6	4.3	6.4	2.8	0.91	4.5	2.3	5.9	2.7	0.52	1.8	2.5	2.2	1.6	5.5	2.3	4.1	6.9	3.5	4.2	5.8	3.6	3,4	3.9	1.3	1.9	1.4	5.6	4.1	3.1	0.76
0,0		0 0 0 0	0.0	1.6	1.6	1.6	0.78	0.46	1.1	0.83	1.5	1.0	0.16	0.77	0.45	0.49	0.47	1.1	0.63	1.0	1.6	0.79	1.0	1.3	0.64	1.0	1.2	0.39	0.62	0.54	1.8	1.1	1.2	0.11
p,p		13.6	2.2	14.	5.0	6.6	2.8	0.52	5.6	2.8	5.5	5.6	0.24	1.1	1.4	2.0	1.3	3.1	1.1	9.9	10.	4.7	4.5	7.2	4.5	3.6	4.6	2.4	2.3	1.0	9.9	4.8	2.8	0.32
000		0.46	0.11	0.99	1.3	0.92	<0.23	<0.03	0.55	0.68	0.97	0.53	<0.02	0.23	0.18	0.16	0.15	<0.03	0.32	<0.23	1.6	0.94	0.25	1.2	0.43	0.58	1.3	0.05	0.61	0.25	1.9	1.3	1.0	0.03
T D.D.		0.18	0.24	0.54	1.3	<0.26	0.32	0.58	0.58	0.20	96.0	0.84	0.18	0.65	0.25	0.14	0.29	0.58	1.1	<0.23	0.86	<0.23	0.25	0.72	0.34	0.80	0.44	<0.03	<0.23	0.30	0.67	0.43	<0.38	90.0
00 0,0		0.41	0.26	0.97	1.7	o.3	0.65	0.56	0.83	0.44	0.59	1.4	0.23	0.23	0.33	0.15	0.16	_•	•	_•	0.65	_•	0.44	0.48	0.17	0.93	0.41	<0.03	0.41	0.26	0.44	0.28	96.0	0.08
FWT		322	405	234	ı I	211	297	240	227	443	318		569	365	348	362	315	421		177	353	281	238	251	292		356	219	311	354	168	232	,	271
F.W		989 1084	1115	724	aı	847	876	844	808	1358	1019	aı	1300	1365	1437	1460	1671	1717	a)	613	353	606	886	830	1031	<i>a</i> :	1083	864	886	965	537	630	0	1486
11		41.5 49.5	46.0	46.5	nposit	36.0	37.0	35.0	36.0	48.0	49.0	nposit	35.5	46.0	45.0	44.5	49.0	47.5	nposite	35.0	51.0	42.5	38.0	41.0	47.0	nposite	45.0	45.5	45.0	45.0	39.0	40.5	Ω.	46.0
ΑY	:	<b>%</b> %	32	52	දි	22	25	22	25	52	23	S	71	22	52	22	52	52	Š	20	52	52	23	52	22	දු	27	27	23	27	23	27	Com	27
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#01		62	72	73		77	46	47	48	26	8		37	62	63	64	65	67		17	22	ස	8	85	8		127	128	129	130	131	132	•	133
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Table VI-10. Results of DDT Analyses on Composite and Individual Fish Samples Collected Summer 1980 (Continued, Page 4)

	Max.	6.1	5.0	5.7	ມ < ລັດ	. w	3.7	6.6	9. č	. α . α	. v	57.	96.	360.	130.	13.	61.	118.	12.	33.	φ.	44.	0.44	24.	100.	9.4	4.2	8.6	0.77	102	22.	9.5	140. 4.2	
	Avg.	6.1	4.8	5,7	ກ ເ ຕຸດ	. w	3.7	6.6	6.8 13.6	. ¤	. v	57.	.96	360.	130.	13.	61.	118.		33.		44.	0.43	24.	1100.	9.4	4.1	2.8	0.74	100	22.	9.1	140.	
	Min.	6.1	4.7	5.7	ກ <	, w	3.7	6.6	6.8 8.61	. a	. v	57.	96.	360.	130.	13.	61.	118.	12.	33.	φ.	44.	0.42	24.	ö	•	4.0	•	0.71	14.	22.	0.6	140. 4.2	
	E D.D.	2.6	2.5	2.3	1.5	. 0	1.2	3.4	2.0		1.6	16.	32.	84.	22.	4.3	14.	32.	0.0	: ::	21.	ပ ကြ န	0.15	9.7	.00	•	1.0	•	•	•	•	2.6	33. 1.6	
	0,0	0.59	0.49	<u>ق</u> و	0.25	0.26	0.48	0.82	0.7		0.52	9	•	19.	7.0	1.2	3.8	12.	1.1	ω, Ο,	•	. 4 . 0		•		۲.	0.68	ထ္ဖ	m,	•	1.1	$\frac{1.7}{1.7}$	8.9	
	<u>d</u> , d	1.7	1:1	2.0	0.83 8.93	1.03	1.6	4.2	2.7	2.4	. 8	27.	45.	230.	81.	5.4	33.	51.	4.0	14.	بور م	ر د و1		8.9	720.	•	09.0	•	•	5.7	13.	1.8	84. 0.90	
	000	0.32	<0.23	0.43	•		0.13	ω,	0.22	ن ر	, ~		8.3	15.	•	0.98	•	•	•	3.7	•	•		•	•	•	<0.22	•	<0.03	1.3	1.4	<0.22	16. 0.18	
	P. d. d	0.62	2	∾.	•	\$0.03 \$0.03	•	_ •	0.58	•	٠ _ ٠	•	•	•	1.7	•	1.0	•		•							0.50		0.0	.0.55 2.0.0	<0.26	0.99	$0.67 \\ 0.31$	
	0,0	0.31	0.40	0.12	0.13	0.09	0.24	0.30	0.53	33	0.69	0.88	1.5	3.4	1.7	0.42	0.84	4.4	0.30	0.57	1.3 2,4	0.54	0.04	•	•	•	0.12	•	•	0.56	0.40	1.9	$\frac{1.6}{0.70}$	
	FWT	338	375	205	861	170	253	343	255	214	•	317	436	392	378	305	376		320	282	360	300	108		197	156	569	250	255	363	113	171	311 316	
_	3	1743	70	862	116	476	743	1128	3001	715	) •	983	1251	1255	1152	$10^{95}$	1118	a	1285	1178	1492	1473	520	aı	863	549	810	808	804	1179	556	629	1229 1050	
Page 4		47.0	48.0	•	. (	29.5	42.0	47.5	43.5	43.5		•	51.5	49.5		47.5	47.0	mposite	•	34.5	•		32.5	mposit	ف	•	43.5	φ,	•	<u>,</u> ,	32.0	40.5	51.5 48.0	
ed,	A	27	27	22	> 2	38	δ2	82	φ γ	3 8	ු වි	28	<b>5</b> 8	58	88	2 <sub>8</sub>	88	S	13	13	2 8	2 0	88	S	<b>5</b> 8	8	58	82	82	28 ک	2 8	58	88 88	
Continu	0	99	9	φı	٥	9	9	9	ש פ	y C	•	9	ဖ	9	9	င	9		9	<b>ω</b> (	o u	၁ (၁	တ		9	ဖ	9	9	9	9	9	9	99	
500	8	SWB SWB SWB	SAB	S.S.	S S	<u>်</u> က	ຽ	ဗ္ဗ	មួ	კ <u>ლ</u>	ខ	ප	႘	႘	႘	ပ္ပ	႘	ខ	SAB	S78		S S	SWB	Sign	ප	ප	႘	පු	පු	႘႘	3 23	ເຮ	ខខ	
	#01	134	136	137	138	18	359	360	361	36.6		337	338	339	340	341	342		13	14	331 222	333	336		343	344	345	346	347	348	10	140	141 143	
	۲٥٥																																TRM 330 TRM 330	

Results of DDT Analyses on Composite and Individual Fish Samples Collected Summer 1980 (Continued, Page 5) Table VI-10.

!	Max.	12.	2.0	34.	0.35	1.2	1.0	0.47	2.5	0.31	0.89	7.1	180.	1.5	2.4	4.4	3.9	24.	0.62	2.0	2.2	7.4	0.40	1.9	2.1
	Avg.																								
	Min.	12.	2.0	34.	0.26	1.2	0.98	0.43	2.5	0.19	0.89	7.1	180.	1.5	2.4	4.2	3,9	24.	0.53	1.9	2.5	7.4	0.30	1.9	2.1
	9.0	4.0	0.38	9.1	0.12	0.34	0.44	0.16	0.91	0.04	0.05	2.0	36.	0.33	0.72	1.2	0.76	5.6	0.25	0.45	99.0	2.2	0.03	0.71	0.71
8	3	2.5	0.23	3.7	0.08	0.25	0.08	0.04	0.33	0.15	0.16	0.89	7.5	0.31	0.50	0.50	0.94	2.5	0.03	0.32	0.22	0.46	0.27	0.12	0.18
٥	विन																							0.87	
8	1 7 0 0	0.22	<0.02	4.3	<0.03	<0.02	0.05	0.05	0.24	<0.03	0.0	0.10	13.	<0.02	0.07	<0.23	<0.03	2.4	<0.03	0.28	0.11	0.72	<0.02	0.95	0.25
	P.P.																							0.04	
8	0																							<0.03	
	FWT	304	240		140	366	1409	180	182	147		347	261	509	479	352	250		127	123	300	262	61	486	
	¥																								Q)
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	DAY	82	<b>5</b> 8	Ŝ	82	82	28	88	82	82	S	88	82	8	88	82	82	වි	21	71	21	7	7	21	Ŝ
	<u> </u>	9	ဖ		9	9	9	ဖ	9	9		ဖ	9	9	9	9	9		7	_	7	^	7	7	
	읾	ပ္ပ	ട	ဌ	Signal Si	SAB	SAB	SAB	Sya	SWB	SR	ខ	೮	ප	ខ	ខ	ട	ပ္ပ		<b>8</b>	<b>B</b>	<u>3</u>	LMB	- WB	L M3
	#0I	144	145		139	146	147	148	149	150		151	152	153	154	155	156		200	501	505	503	502	206	
	10C	<b>TRM 330</b>	TRM 330	<b>TRM 330</b>	<b>TRM 330</b>	<b>TRM 330</b>	TRM 340	TRM 340	TRM 340	TRM 340	*	TRM 340	<b>TRM 340</b>	<b>TRM 340</b>	TRM 340	TRM 340	TRM 340	<b>TRM 340</b>	<b>JRM 345</b>	<b>TRM 345</b>	TRM 345	<b>TRM 345</b>	TRM 345	<b>TRM 345</b>	TRM 345

DDT Concentrations in "g/gm LOC = Stream and mile point: FCM=Flint Creek Mile, LCM=Limestone Creek Mile, SCM=Spring Creek Mile, TRM=Tennessee River Mile; ID# = Water and Air Research Identification Number; SP = Species; CC = Channel Catfish; SMB = Small Mouth Buffalo; LMB = Large Mouth Bass; DAY = Month and Date of collection; LT = Total Length, cm; WT = Weight, grams; FWT = Fillet Weight. NOTES:

# QUALITY ASSURANCE FOR WATER AND AIR RESEARCH, INC. SUMMER 1980 FISH SAMPLING

#### 1.0 OBJECTIVE

The objective of this quality assurance program was to utilize procedures which would insure that final analytical data were truly valid and representative of the concentration profile for the media analyzed. Data from this program were used to assess and measure the precision and accuracy of analytical results obtained and to identify any segment of the total effort which may have been invalid.

#### 2.0 SCOPE

This program covered the analysis of fish samples taken in June and July 1980 and analyzed by Water and Air Research, Inc. (WAR). Samples were analyzed for DDT isomers and metabolites. Other laboratories participating in the quality control effort included Stewart Laboratories, Inc. (SLI), Environmental Protection Agency (EPA) and Tennessee Valley Authority (TVA).

#### 3.0 PROCEDURES AND METHODS

#### 3.1 SAMPLING AND SAMPLE HANDLING

Sample collection and initial sample preparation was carried out by WAR. Multiple replicate ground fish tissue samples were placed in identical containers with appropriate sample identification.

#### 3.2 SELECTION OF SAMPLES FOR QUALITY CONTROL

Selection of which samples (by location and species) to duplicate and split was made by U.S. Army Corps of Engineers (COE) in Mobile in consulation with WAR. Efforts were made to insure that the quality control program included the range of species and DDTR concentrations expects

#### 3.3 PROCEDURE FOR BLINDING SAMPLES

After the selection of samples for quality control had been made, personnel outside the WAR organization "blinded" all samples. All existing labels were removed from the sample bottles and they were relabeled using randomly assigned identification numbers. For the WAR samples, duplicates plus all remaining samples were so "blinded". For the laboratories receiving only selected split samples, they were randomly numbered also. The "key" to sample identification remained unknown to all laboratories until after final results had been submitted.

#### 3.4 STATISTICAL EVALUATION

All quality control information was statistically analyzed to determine the within-laboratory variability and between-laboratory variability. Analysis of variance techniques were utilized. Additionally, less rigorous relative error comparisons were made.

#### 4.0 RESULTS

#### 4.1 COMPOSITE FISH ANALYSES

Initially, analyses were performed on composite samples consisting of six individual fish. Twenty-four composite samples were analyzed. Of this total, 6 samples were submitted in duplicate to WAR and 4 samples were submitted in duplicate to SLI, EPA, and TVA.

#### 4.1.1 WAR Blind Splits

The results of the six blind splits analyzed by WAR are shown in Table VI-11. Average relative error was 17.2 percent which is equivalent to an average ratio of the two analyses being 1.19.

#### 4.1.2 Between-Laboratory Splits

The results of the between-laboratory splits are shown in Table VI-12. Analysis of variance showed that no systematic differences existed between laboratories, i.e. no laboratory got consistently higher or lower values. The log transform was used on all data as a normalizing technique.

#### 4.2 INDIVIDUAL FISH ANALYSIS

After the composite analyses were completed, a decision was made to analyze all 144 fish individually. Of this total, 16 samples were submitted in duplicate to WAR and 8 samples were submitted in duplicate to EPA.

#### 4.2.1 WAR Blind Splits

The results of the 16 blind split analyses are shown in Table VI-13. Average relative error was 15.1 percent which is equivalent to an average ratio of the two analyses being 1.16.

#### 4.2.2 Between-Laboratory Splits

The results of the between-laboratory splits are shown in Table VI-14. Analysis of variance techniques showed that no systematic differences existed between the two laboratories. The log transform was used on all data as a normalizing technique. Using mean values for the eight samples duplicated within labs and split between labs, the relative error ranged from -29.1 to +24.3 percent and averaged -7.2 percent (WAR values higher than EPA). WAR values were higher for 5 pairs and EPA values higher for 3 pairs. The average relative error was not statistically significantly different from zero.

#### 5.0 CONCLUSIONS

The results of the fish analyses conducted by WAR are valid. These results can be utilized, subject to appropriate recognition of the analytical variability as determined from the blind split analyses.

Table VI-11. Tabulation of WAR Quality Control Blind Split Data for Composite Fish Samples.

Replicate	0,p'	(µg/g) <b>p,</b> p'	0,p'	(µg/g) P•P'	DDE o,p'	(µg/g) p,p'	Total DDTR (µg/g)
la	0.76	0.75	0.32	3.1	0.96	3.1	9.0
1b	1.1	0.86	0.83	4.2	1.1	3.8	12.0
2a	5.1	4.4	10	43	11	27	100
2b	3.8	8.5	14	59	13	36	130
3a	2.2	1.3	2.3	8.8	2.2	5.1	22
3b	2.9	2.5	2.5	10	2.8	6.1	27
4a	0.32	0.64	0.97	0.61	0.44	1.5	4.5
4b	0.50	0.58	0.31	0.69	0.42	1.5	4.0
5a	1.3	1.2	0.45	2.2	0.92	2.4	8.4
5b	1.4	0.49	0.61	2.9	1.1	3.0	9.5
6a	1.5	1.5	2.5	6.6	2.6	9.6	24
6b	1.4	1.5	2.3	7.0	2.8	9.8	25

Table VI-12. Tabulation of Between-Lab Quality Control Data for Composite Fish Samples

Lab	Replicate	DDT (	μg/g) <b>p,p</b> '	DDD (	p <b>,p'</b> p <b>,p'</b>	DDE (1	ug/g) p,p'	Total DDTR* (ug/g) Min. Ave. Max.
WAR WAR	1a 1b	2.2	1.3	2.3	8.8 10	2.2 2.8	5.1 6.1	22 27
EPA	la	1.7	1.1	2.9	16	2.5	8.1	32
EPA	1b	1.4	0.88	2.4	14	2.3	6.7	28
SL I	1a	1.72	1.59	1.98	12.7	1.16	6.72	25.9
SL I	1b	1.56	1.48	1.73	13.6	1.00	6.89	26.3
TVA	1a	2.1	3.3	3.2	14.4	3.6	9.0	35.6
TVA	1b	1.6	2.6	2.3	11.2	2.5	6.9	27.1
WAR	2 a	0.32	0.64	0.97	0.61	0.44	1.5	<b>4.5</b>
WAR	2 b	0.50	0.58	0.31		0.42	1.5	<b>4.0</b>
EPA	2 a	0.23	0.24	0.32	1.00	0.44	1.9	4.1
EPA	2 b	0.24	0.24	0.37	1.2	0.48	2.3	4.8
SLI	2a	0.32	0.38	0.32	0.82	0.29	0.98	3.11
SLI	2b	0.30	0.36	0.29	0.86	0.27	1.17	3.25
TVA	2 a	0.25	0.53	0.30	0.75	0.54	1.9	4.3
TVA	2 b	0.25	0.47	0.25	0.68	0.50	1.7	3.9
WAR	3a	0.76	0.75	0.32	3.1	0.96	3.1	9.0
WAR	3b	1.1	0.86	0.83	4.2	1.1	3.8	12
EPA	3a	0.33	0.22	0.47	3.1	0.71	2.6	7.4
EPA	3b	0.38	0.25	0.57	3.6	0.83	2.9	8.5
SL I	3a	0.76	0.89	0.73	5.84	0.64	4.71	13.6
SL I	3b	0.78	0.88	0.68	6.18	0.63	4.68	13.8
TVA	3 a	0.48	1.0	0.65	3.6	1.1	3.6	10.4
TVA	3 b	0.54	1.2	0.79	4.2	1.3	4.4	12.4

Table VI-12. Tabulation of Between-Lab Quality Control Data for Composite Fish Samples (Continued, Page 2)

Lab	Replicate	DDT (	ug/g) p,p'	DDD o,p'	(µg/g) <b>P.P'</b>	DDE (	ug/g) P•P'	Total Min.	DDTR*	(µg/g) Max.
WAR WAR	4a 4b	5.1 3.8	4.4 8.5	10 14	43 59	11 13	27 36	···	100 130	
EPA EPA	4a 4b	4.2 1.8	4.0 1.7	21 9.0	100 40	20 7.2	59 22		210 82	
SLI SLI	4a 4b	4.59 3.96	5.21 4.77	12.9 12.0	40.4 37.2	6.69 6.28	23.2 21.3		93.0 85.5	
TVA TVA	4a 4b	2.1 1.4	<2.1 <1.4	10.9 11.5	52.2 54.5	10.6 11.1	36.8 39.3	113 118	114 119	115 119

Abbreviations: WAR - Water and Air Research, Inc., Gainesville, FL

EPA - Environmental Protection Agency, Athens, GA

SLI - Stewart Laboratories, Inc., Knoxville, TN TVA - Tennessee Valley Authority, Chattanooga, TN

<sup>\*</sup>Total DDTR values are calculated as the direct sum of the six isomers and metabolites. Min. total DDTR calculated by setting all "less than" values equal to zero. Average total DDTR calculated by setting all "less than" values equal to 1/2 of the detection limit. Max. total DDTR calculated by setting all "less than" values equal to the detection limit. Where no min. or max. figures are shown they are equal to the average value.

Table VI-13. Tabulation of WAR Quality Control Blind Split Data for Individual Fish.

Replicate	DDT o,p'	(µg/g) p,p'	o,p'	(pg/g) p,p'	DDE o,p'	(µg/g) p,p'	Total Min.	DDTR*	'(µg/g) Max.
la	0.21	0.59	0.78	2.5	0.58	2.7		7.4	
1b	0.12	0.45	0.86	2.9	0.69	3.0		8.0	
2a	0.70	0.38	0.20	3.0	0.95	2.8		8.0	
2b	0.70	0.26	0.18	3.2	0.78	3.2		8.3	
3a	0.30	0.14	0.69	2.8	0.54	1.5		6.0	
3b	0.30	1.1	0.44	3.0	0.67	1.7		7.2	
4a	0.30	0.28	0.46	1.7	3.9	1.5		8.1	
4b	0.44	0.26	0.98	3.9	1.1	2.6		9.3	
5a	0.43	<0.23	0.70	2.6	0.69	2.2	6.6	6.7	6.8
. <b>5</b> b	0.45	0.39	0.66	2.9	0.97	2.4		7.8	
6a	0.67	1.6	1.1	4.1	1.3	6.6		15	
6b	0.51	0.31	0.84	6.2	1.7	5.2		15	
7a	0.62	0.27	. 0.19	0.20	0.49	1.6		3.4	
7b	0.78	0.35	0.17	1.6	0.43	1.5		4.8	
8a	0.28	0.45	0.26	1.1	0.74	1.6		4.4	
8b	0.25	0.15	0.17	1.0	0.35	1.2		3.1	
9a	0.32	< 0.23	0.84	4.3	0.70	3.6	9.8	9.9	10
<b>9</b> b	0.29	0.69	0.75	4.1	0.94	3.3		10	
10a	1.6	2.4	8.6	46	7.6	32		98	
10ь	1.4	1.4	8.0	44	7.0	31		93	
11a	0.03	< 0.03	0.02	0.20	0.04	0.13	0.42	0.44	0.45
11b	0.02	< 0.02	0.03	D.26	0.05	0.19	0.55	0.56	0.57
12a	< 0.03	0.05	0.10	1.1	0.08	0.78	2.1	2.1	2.1
12b	< 0.03	< 0.03	0.09	0.84	0.15	0.64	1.7	1.8	1.8
13a	0.69	0.64	0.36	2.9	1.2	4.7		10	
13b	0.78	1.6	0.39	3.4	1.4	5.5		12	

Table VI-13. Tabulation of WAR Quality Control Blind Split Data for Individual Fish (Continued, Page 2)

Replicate	DDT (µg/g) o,p' p,p'		DDD (µg/g) o,p' p,p'		DDE (µg/g) o,p' p,p'		Total DDTR*(µg/g) Min. Ave. Max.		
	0.20	0.13	0.15	0.85	0.35	1.0	<del></del>	2.7	
14b	0.14	0.21	0.19	0.99	0.30	1.1		2.9	
15a	0.27	0.22	0.80	3.4	0.92	4.4		10	
15b	0.33	0.42	0.96	4.6	1.3	5.5		13	
16a	0.36	0.24	<0.02	0.09	0.23	0.40	1.3	1.3	1.3
16b	0.34	0.14	<0.03	0.07	0.20	0.29	1.0	1.1	1.1

<sup>\*</sup> Total DDTR values are calculated as the direct sum of the six isomers and metabolites. Minimum total DDTR calculated by setting all "less than" values equal to zero. Average total DDTR calculated by setting all "less than" values equal to 1/2 of the detection limit. Max. total DDTR calculated by setting all "less than" values equal to the detection limit. Where no min. or max. figures are shown they are equal to the average value.

Table VI-14. Tabulation of Between-Lab Quality Control Data for Individual Fish.

			(µg/g)	DDD (µg/g)		DDE (µg/g)		Total DDTR*(µg/g		
Lab	Replicate	o,p'	p,p'	ο,ρ'	p,p'	o,p'	p,p'	Min.	Ave.	Max.
WAR	1a	0.70	0.38	0.20	3.0	0.95	2.8		8.0	-
WAR	1b	0.70	0.26	0.18	3.2	0.78	3.2		8.3	
EPA	1a	1.8	<0.7	0.61	3.0	1.3	4.3	11.0	11.4	11.7
EPA	1b	1.2	<0.7	0.58	2.9	1.1	3.3	9.1	9.4	9.8
WAR	2a	0.30	0.28	0.46	1.7	3.9	1.5		8.1	
WAR	2b	0.44	0.26	0.98	3.9	1.1	2.6		9.3	
EPA	2a	0.77	< 0.7	1.2	3.3	1.1	2.6	9.0	9.3	9.7
EPA	2b	0.68	<0.6	1.1	2.4	1.0	2.2	7.4	7.7	8.0
WAR	3a	0.62	0.27	0.19	0.20	0.49	1.6		3.4	
WAR	3b	0.78	0.35	0.17	1.6	0.43	1.5		4.8	
EPA	3a	0.69	<0.6	0.37	1.2	0.36	0.9	3.6	3.9	4.2
EPA	3b	0.68	<0.5	0.38	1.5	0.43	1.6	4.6	4.8	5.1
WAR	4a	0.32	<0.23	0.84	4.3	0.7	3.6	9.8	9.9	10
WAR	4b	0.29	0.69	0.75	4.1	0.94	3.3		10	
EPA	4a	0.48	0.58	0.69	2.6	0.75	2.5		7.6	
EPA	4b	0.42	0.47	0.75	2.9	0.78	3.0		8.3	
WAR	5a	1.6	2.4	8.6	46	7.6	32		98	
WAR	5b	1.4	1.4	8.0	44	7.0	31		93	
EPA	5a	2.8	< 3	8.1	29	9.0	28	77	78	80
EPA	5b	2.1	< 3	7.5	29	8.1	27	74	75	77
WAR	6a	< 0.03	0.05	0.10	1.1	0.08	0.78	2.1	2.1	2.1
WAR	6b	<0.03	<0.03	0.09	0.84	0.15	0.64	1.7	1.8	1.8
EPA	6a	0.039	<0.1	0.094	0.59	0.095		2 1.3	1.4	1.4
EPA	6b	0.041	0.096	0.099	0.60	0.097			1.52	
WAR	7 <b>a</b>	0.27	0.22	0.80	3.4	0.92	4.4		10	
WAR	7 <b>b</b>	0.33	0.42	0.96	4.6	1.3	5.5		13	
EPA	7 <b>a</b>	0.44	< 0.4	1.0	3.2	1.3		10.8		11,2
T.PA	7 <b>b</b>	0.56	< 0.4	1.1	4.1	1.4		12.1		

Table VI-14. Tabulation of Between-Lab Quality Control Data for Individual Fish. (Continued, Page 2)

	0-1	DDT (µg/g)		DDD (µg/g)		DDE (μg/g) o,p' p,p'		Total	DDTR*(µg/g)	
Lab	Replicate	о,р	P.P.	0.p	<b>P</b> ,p'	0,p	P•b.	Min.	Ave.	max.
WAR	8a	0.36	0.24	< 0.02	0.09	0.23	0.40	1.3	1.3	1.3
WAR	8b	0.34	0.14	<0.03	0.07	0.20	0.29	1.0	1.1	1.1
EPA	8a	0.32.	< 0.4	< 0.08	0.068	0.12	0.37	0.9	1.1	1.4
EPA	8b	0.29	< 0.3	< 0.07	0.062	0.10	0.34	0.8	1.0	1.2

Abbreviations: WAR - Water and Air Research, Inc., Gainesville, FL. EPA - Environmental Protection Agency, Athens, GA.

<sup>\*</sup> Total DDTR values are calculated as the direct sum of the six isomers and metabolites. Min. total DDTR calculated by setting all "less than" values equal to zero. Average total DDTR calculated by setting all "less than" values equal to 1/2 of the detection limit. Maximum total DDTR calculated by setting all "less than" values equal to the detection limit. Where no min. or max. figures are shown they are equal to the average value.

# REFERENCES

Curtis, J.T., and R.P. McIntosh. 1951. The upland forest continuum in the prairie-forest border region of Wisconsin. Ecology. 32:476-496.

